

APOSTLE ISLANDS NATIONAL LAKESHORE

General Management Plan
Wilderness Management Plan
Environmental Impact Statement



*Final General Management Plan / Wilderness Management Plan /
Environmental Impact Statement*
for Apostle Islands National Lakeshore

Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement

Apostle Islands National Lakeshore

Bayfield and Ashland Counties, Wisconsin

Apostle Islands National Lakeshore was authorized by an act of Congress on September 26, 1970 (Public Law 91-424). The last comprehensive management plan for the park was completed in 1989. Much has changed since then—visitor use patterns and types have changed, people are seeking out new recreational activities in the park, and the Gaylord Nelson Wilderness was designated in December 2004. Each of these changes has implications for how visitors access and use the park, the facilities needed to support those uses, how resources are managed, and how the National Park Service manages its operations. A new plan is needed.

This document examines four alternatives for managing Apostle Islands National Lakeshore for the next 15–20 years. It also analyzes the impacts of implementing each of the alternatives. **Alternative 1**, the “**no-action**” **alternative**, consists of the existing park management and serves as a basis for comparison in evaluating the other alternatives. The concept for park management under **alternative 2** would be to provide opportunities for more people to have an island experience. The concept for park management under **alternative 3** would be to provide primitive, lake-oriented recreation and education opportunities that include some new and different opportunities. The emphasis in **alternative 4** would be on providing a greater variety of structured recreation opportunities on the islands, in nonwilderness areas, and on the mainland. Alternative 2 is the National Park Service’s preferred alternative.

The *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement* has been distributed to other agencies and interested organizations and individuals for their review and comment.

SUMMARY

This *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement* describes the general path the National Park Service (NPS) intends to follow in managing Apostle Islands National Lakeshore for the next 15–20 years. More specifically, this plan is intended to

- clearly define resource conditions and visitor uses and experiences to be achieved in Apostle Islands National Lakeshore
- provide a framework for park managers to use when making decisions about how to best protect park resources, how to provide quality visitor uses and experiences, how to manage visitor use, and what types of facilities, if any, to develop in/near Apostle Islands National Lakeshore
- provide direction for management of the Gaylord Nelson Wilderness, including its resources and visitors.

The general management plan does not describe how particular programs or projects should be prioritized or implemented. Those decisions will be addressed in future more-detailed planning efforts. All future plans will tier from the approved general management plan.

This *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement* examines four alternatives for managing Apostle Islands National Lakeshore. In all of the alternatives, NPS managers would continue to strive to protect and maintain natural and cultural resource conditions. Natural and cultural resource management would concentrate on long-term monitoring, research, restoration, and mitigation where appropriate. Interpretation/education programs would continue to

provide a variety of personal and nonpersonal services.

Alternative 1, The No-Action Alternative

Under alternative 1, the National Park Service would continue to manage Apostle Islands National Lakeshore as it has been managed since the 1989 general management plan was approved and the Gaylord Nelson Wilderness was designated in 2004.

The natural resource program would continue to focus on inventorying and monitoring, resource protection and restoration, research, and mitigation where appropriate.

The cultural resource program would continue to focus on surveying cultural resources; protecting historic structures and landscapes, particularly in and around the light stations; and on mitigation where appropriate.

The interpretation and education programs would continue to provide a variety of personal and nonpersonal services similar to those offered currently.

In alternative 1, most of the adverse impacts on natural resources, wilderness character, visitors, and park operations would be negligible to minor in magnitude. No adverse impacts would occur to cultural resources. Among the key impacts would be the following. Sandscapes and shorelines would continue to be affected by visitors in localized areas. Minor to moderate, long-term, adverse impacts would occur to the natural soundscape in localized areas due to visitor use and NPS management activities. Moderate to major, long-term, beneficial impacts to

SUMMARY

visitor use and experience would continue due to continued opportunities for high-quality lake and island recreation opportunities. Minor to moderate, long-term, adverse impacts would occur to park operations due to continued inadequate facilities, fragmentation of park staff and facilities, staffing shortages, and lack of funding. None of these impacts would be considered unacceptable or would result in the impairment of park resources and values.

Alternative 2, The Preferred Alternative

Alternative 2 would focus on providing opportunities for more people to have an island experience.

Two light stations would be restored or rehabilitated, similar to the Raspberry Island light station. Part of the Long Island light station would be rehabilitated for park staff housing.

If feasible, additional transportation opportunities would be sought to encourage visitors to come to Sand, Basswood, and Oak islands. Some additional visitor facilities would be developed on these islands, including day use areas, new trails, and campsites.

Manitou fish camp would be preserved and stabilized, the cultural landscape would be partially rehabilitated, and the area would be interpreted.

There would be no change in the number of public docks, but some docks would be relocated, improved, or expanded.

The Bayfield visitor center would be built in a new location closer to the water to improve contact with visitors and to be located with an operations center. The park headquarters would remain in the Old Bayfield County Courthouse. The Little Sand Bay Visitor

Center would be replaced with a smaller structure that offers the same level of visitor services as today but has less office space. A new ranger station and accessible beach ramp would be developed at Meyers Beach.

Compared to alternative 1, most of the impacts of alternative 2 on natural resources, wilderness character, visitors, and park operations would be long term and negligible to minor in magnitude. No adverse impacts would occur to cultural resources. Among the key impacts would be the following. Sandscapes and shorelines would continue to be affected by visitors and by existing docks, resulting in minor to moderate, long-term, adverse impacts in localized areas. New developments in this alternative and increased visitor use on some islands would result in minor to moderate, long-term, adverse impacts to vegetation and to the natural soundscape in localized areas. Minor to major, long-term, beneficial impacts would occur to visitor use and experiences due to enhanced access to the islands and increased recreational opportunities. Long-term, beneficial impacts would occur to park operations due to improved park facilities, decreased staff fragmentation, and increased staffing levels. Long-term, beneficial impacts also would occur to the socioeconomic environment due to increased spending by visitors and the National Park Service under alternative 2. None of the impacts of alternative 2 would be considered unacceptable or would result in the impairment of park resources and values.

Alternative 3

Alternative 3 would focus on providing primitive, lake-oriented recreation and education opportunities, with some new and different opportunities provided.

Focus would continue on maintaining the Raspberry Island light station; part of the

Long Island light station would be rehabilitated for park staff housing. A few new visitor facilities would be provided on Sand, Basswood, and Oak islands including interpretive trails and new group campsites, but there would be no new day-use facilities.

Existing transportation opportunities would be maintained; no new ones would be developed.

There would be no change in the public docks with the exception of improvements to Michigan Island dock.

The park headquarters would remain in the Old Bayfield County Courthouse. The Bayfield visitor center would be expanded in the old courthouse and serve as the park's primary visitor contact facility. The Little Sand Bay Visitor Center would be replaced with a kiosk. A new ranger station would be built at Meyers Beach. A new park operational facility would be built at a location to be determined.

Alternative 3 would have largely the same effects as described under alternative 2. One difference is that, compared to alternative 1, alternative 3 would have a minor to moderate, long-term, beneficial impact on visitor use and experience due to slight improvements in access to the islands, the continuation of existing recreational opportunities, and increased interpretive opportunities on the mainland. None of the impacts of alternative 3 would be considered unacceptable or would result in the impairment of park resources and values.

Alternative 4

Under alternative 4, the emphasis would be on providing a greater variety of structured recreation opportunities for visitors. More visitor facilities would be provided in island nonwilderness areas, and mainland visitor opportunities would be expanded.

Focus would continue on maintaining the Raspberry Island light station; part of the Long Island light station would be rehabilitated for park staff housing.

A few new visitor facilities would be provided on Sand, Basswood, and Oak islands including interpretive trails and new group campsites, but no new day-use facilities would be developed.

Existing transportation opportunities would be maintained; no new ones would be developed.

Some docks, including the Michigan Island dock, would be improved or expanded for boaters; more docks possibly could be installed.

The park headquarters would remain at the Old Bayfield County Courthouse and a new visitor center would be built in a new location closer to the water in Bayfield. The Little Sand Bay Visitor Center would be replaced with a new visitor contact station with improved services. A new ranger/visitor contact station and accessible beach ramp would be built at Meyers Beach, and a new park operations facility would be built at a location to be determined.

With a few exceptions, alternative 4 would have largely the same effects as alternative 2. One difference is that, compared to alternative 1, alternative 4 would have a minor to moderate, long-term, adverse effect on vegetation in localized areas due to the development of new facilities and increased visitor use on some islands. The development of additional dispersed campsites in the wilderness area would have a minor, long-term, adverse impact on the wilderness character due to some visitors likely perceiving a loss of solitude and apparent naturalness. None of the impacts of alternative 4 would be considered unacceptable or would result in the impairment of park resources and values.

SUMMARY

Next Steps and Implementation of the Plan

Following distribution of the *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement* and a 30-day no-action period, a record of decision approving a final plan will be signed by the NPS regional director. The record of decision documents the NPS selection of an alternative for implementation. With the signing of the record of decision, the plan can then be implemented.

The selected alternative will become the new management plan for the park and will be

implemented over 15–20 years. It is important to note that not all of the actions in the alternative will necessarily be implemented immediately.

The implementation of the approved plan will depend on future NPS funding levels and servicewide priorities, and on partnership funds, time, and effort. The approval of a general management plan does not guarantee that funding and staffing needed to implement the plan will be forthcoming. Full implementation of the plan could be many years in the future.

CONTENTS

CHAPTER 1: BACKGROUND

<i>A GUIDE TO THIS DOCUMENT</i>	3
<i>INTRODUCTION AND PURPOSE AND NEED FOR THE PLAN</i>	5
Brief Description of the Park	6
Purpose of the Plan	6
Need For the Plan	11
<i>FOUNDATION FOR PLANNING AND MANAGEMENT</i>	12
Park Purpose	12
Park Significance	12
Fundamental Resources and Values	13
Primary Interpretive Themes	14
<i>SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS</i>	15
Treaty Rights and Other Reserved Tribal Rights	15
Wilderness	15
Hunting, Fishing, and Trapping	15
Use of Snowmobiles and Off-Road Vehicles in the Park	15
Navigational Aids	16
Bayfield Visitor Center GSA Lease	16
Roys Point GSA Lease	16
Apostle Islands CruiseS Contract	16
Agreement with the Town of Russell Regarding Operation of Little Sand Bay	16
Agreement with the State of Wisconsin Regarding the Protection of Submerged Cultural Resources and Bottomlands	16
Interagency Agreement on the Northern Great Lakes Visitor Center	17
Memorandum of Understanding with the Ojibwe Bands	17
Other Valid Rights	17
<i>DESIRED CONDITIONS AND RELATED SERVICEWIDE LEGAL AND POLICY REQUIREMENTS</i>	18
<i>SCOPE OF THE GENERAL MANAGEMENT PLAN / WILDERNESS MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT</i>	46
Planning Issues / Concerns to be Addressed	46
Planning Issues/Concerns Not Being Addressed	52
Identification of Impact Topics	52
Relationship of Other Planning Efforts to this General Management Plan / Wilderness Management Plan	67
Next Steps and Implementation of the Plan	69

CHAPTER 2: FRAMEWORK FOR MANAGEMENT, USE, AND ADMINISTRATION OF THE GAYLORD NELSON WILDERNESS

<i>INTRODUCTION</i>	73
Wilderness Character	73
History of Wilderness at Apostle Islands National Lakeshore	74
Wilderness Management Goals and Philosophy	75

CONTENTS

USES, DEVELOPMENTS, AND MANAGEMENT ACTIONS PERMITTED AND PROHIBITED IN WILDERNESS 79

- Applying the Minimum Requirement Concept 80
- Appropriate Natural Resource Conservation and Restoration Activities in Wilderness 81
- Fire Management 84
- Management of Cultural Resources 84
- American Indian Treaty Rights and Access 85
- Hunting and Trapping 85
- Accessibility for Persons With Disabilities 85
- Special Events 86
- Interpretation and Education 86
- camping permits 87
- Commercial Services 87
- Scientific Activities and Research 87
- Campsite Designation Criteria 88
- NPS Administration / Operational Activities and Facilities 88

CHAPTER 3: THE ALTERNATIVES

INTRODUCTION 95

- Formulation of the Alternatives 95
- Potential for Boundary Adjustments 96
- Identification of the Preferred Alternative 96

MANAGEMENT ZONES 98

USER CAPACITY 105

- Overview of Current and Potential Use-Related Impacts 106
- Indicators and Standards 107

ALTERNATIVE 1 (NO ACTION) 111

- Concept and Summary 111
- Management Zoning 111
- User Capacity 111
- Management of Specific Areas 112
- Estimated Costs 113

ALTERNATIVE 2 (NPS PREFERRED ALTERNATIVE) 114

- Concept and Summary 114
- Management Zoning 114
- User Capacity 115
- Management of Specific Areas 115
- Estimated Costs 118

ALTERNATIVE 3 123

- Concept and Summary 123
- Management Zoning 123
- User Capacity 124
- Management of Specific Areas 124
- Estimated Costs 126

ALTERNATIVE 4 131

- Concept and Summary 131
- Management Zoning 131
- User Capacity 132
- Management of Specific Areas 132

Estimated Costs	135
<i>DEVELOPMENT OF COST ESTIMATES OF THE ALTERNATIVES</i>	139
<i>MITIGATIVE MEASURES COMMON TO ALL ACTION ALTERNATIVES</i>	140
Natural Resources	140
Cultural Resources	145
Visitor Safety and Experiences	146
<i>ENVIRONMENTALLY PREFERABLE ALTERNATIVE</i>	147
<i>FUTURE STUDIES AND IMPLEMENTATION PLANS</i>	149
<i>ALTERNATIVES AND MANAGEMENT ACTIONS CONSIDERED BUT DISMISSED</i>	150
Provide Public Lodging on Rocky Island	150
Build A Pedestrian Bridge Over the Sand River	150
Build a Trail Around the Sand River Wetland Complex	151
Permit Biking on the Lakeshore Trail	151
<i>COMPARISON OF THE ALTERNATIVES</i>	153
CHAPTER 4: AFFECTED ENVIRONMENT	
<i>INTRODUCTION</i>	165
<i>NATURAL RESOURCES</i>	166
Soils	166
Geology And Coastal Processes	167
Surface Water Quality	168
Wetlands	170
Floodplains	170
Vegetation	171
Wildlife	175
Threatened and Endangered Species	180
Natural Soundscape	181
<i>WILDERNESS CHARACTER</i>	184
Natural	184
Undeveloped	184
Untrammeled	185
Solitude or a Primitive and Unconfined Type of Recreation	185
<i>CULTURAL RESOURCES</i>	187
Historic Structures / Cultural Landscapes	187
Archeological Resources	195
Ethnographic Resources	197
<i>VISITOR USE AND EXPERIENCE</i>	200
Visitor Use and Characteristics	200
Visitor Perceptions, Opinions, and Concerns	203
Ability to Access the Park, Including Universal Access	203
Lake and Island Recreational Opportunities and Experiences	204
Mainland Recreational Opportunities and Experiences	207
Opportunities to Understand the Significant Stories of the Apostle Islands	208
Visitor Safety	209
<i>PARK OPERATIONS</i>	210
Interpretation and Education	210
Protection	210

CONTENTS

Planning and Resource Management 210
Business Services 211
Facility Management 211

SOCIOECONOMIC ENVIRONMENT 212

Population and Demographics 212
Economy 212
Transportation 213
Visitor Spending 213
Operations Spending 213
Authorized NPS Business Partners 213

CHAPTER 5: ENVIRONMENTAL CONSEQUENCES

INTRODUCTION 217

METHODS AND ASSUMPTIONS FOR ANALYZING IMPACTS 219

Natural Resources 220
Wilderness Character 220
Section 106 of the National Historic Preservation Act and Impacts to Cultural Resources 220
Visitor Use And Experience 221
Park Operations 221
Socioeconomic Environment 222

IMPAIRMENT OF PARK RESOURCES 228

CUMULATIVE IMPACT ANALYSIS 229

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 1 231

Natural Resources 231
Wilderness Character 239
Cultural Resources 241
Visitor Use and Experience 245
Park Operations 248
Socioeconomic Environment 249
Unavoidable Adverse Impacts 250
Irreversible and Irretrievable Commitments of Resources 250
The Relationship between Short-Term Uses of the Environment and Long-Term Productivity 251

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 2 252

Natural Resources 252
Wilderness Character 263
Cultural Resources 264
Visitor Use and Experience 269
Park Operations 273
Socioeconomic Environment 274
Unavoidable Adverse Impacts 275
Irreversible and Irretrievable Commitments of Resources 276
The Relationship between Short-Term Uses of the Environment and Long-Term Productivity 276

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 3 277

Natural Resources 277
Wilderness Character 287
Cultural Resources 289
Visitor Use and Experience 294

Park Operations	298
Socioeconomic Environment	299
Unavoidable Adverse Impacts	300
Irreversible and Irretrievable Commitments of Resources	300
The Relationship between Short-Term Uses of the Environment and Long-Term Productivity	301
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 4	302
Natural Resources	302
Wilderness Character	313
Cultural Resources	314
Visitor Use and Experience	319
Park Operations	324
Socioeconomic Environment	325
Unavoidable Adverse Impacts	326
Irreversible and Irretrievable Commitments of Resources	326
The Relationship between Short-Term Uses of the Environment and Long-Term Productivity	327
CHAPTER 6: CONSULTATION AND COORDINATION	
PUBLIC AND AGENCY INVOLVEMENT	331
Public Meetings and Newsletters	331
Consultation with Other Agencies/Officials and Organizations	332
Other Federal and State Agencies, Regional and Local Governments, and Partner Organizations	333
Consultation with American Indians	333
FUTURE COMPLIANCE REQUIREMENTS	335
PUBLIC OFFICIALS, AGENCIES, AND ORGANIZATIONS RECEIVING A COPY OF THIS DOCUMENT	336
Federal Agencies	336
Congressional Delegation	336
American Indian Tribes and Agencies	336
State of Wisconsin Agencies	337
State and Local Elected Officials	337
Local and Regional Government Agencies	337
Organizations and Businesses	337
Libraries	338
Media	338
Individuals	338
PUBLIC COMMENTS ON THE DRAFT GENERAL MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT WITH AGENCY RESPONSES	339
Record of Public Comment	339
Summary of Public Meetings	340
Summary of Written Comments	340
Agency Responses to Comments	340
APPENDIXES, REFERENCES, PREPARERS, INDEX	
APPENDIX A: LEGISLATION	349
APPENDIX B: MINIMUM REQUIREMENT ANALYSIS	354
APPENDIX C: CAMPGROUND DESIGN ANALYSIS AND MANAGEMENT STRATEGIES	364
APPENDIX D: AERIAL PHOTO OF MOUTH OF SAND RIVER	369
APPENDIX E: CONSULTATION LETTERS	370
APPENDIX F: LETTERS AND INTERNET COMMENTS PERTAINING TO THE SUBSTANTIVE ISSUES	375

CONTENTS

REFERENCES 559

PREPARERS AND CONTRIBUTORS 568

Tables

Table 1: Desired Conditions and Strategies with Related Servicewide Legal and Policy Requirements 18

Table 2: Impact Topics Retained and Dismissed for Apostle Islands National Lakeshore 53

Table 3: Uses, Developments, and Management in Wilderness 79

Table 4: Wilderness Character Indicators to be Monitored in the Gaylord Nelson Wilderness 92

Table 5: Management Zones 98

Table 6: User Capacity Indicators and Standards 108

Table 7: Management Zones in Alternative 2 115

Table 8: Management Zones in Alternative 3 124

Table 9: Management Zones in Alternative 4 132

Table 10: Estimated Costs of the Alternatives (in 2008 dollars) 139

Table 11: Comparison of the Key Differences in the Alternatives 153

Table 12: Summary of Key Impacts of the Alternatives 158

Table 13: Common Noise Levels and Their Effects on the Human Ear 183

Table 14: Summary of Ashland and Bayfield Counties Population, 1950–2006 212

Table 15: Impact Threshold Definitions 222

Table 16: Future Resource Compliance Required for Implementation of the Preferred Alternative 335

Figures

Figure 1: Location Map 7

Figure 2: Park Map 9

Figure 3: Wilderness Boundary 77

Figure 4: Map of Alternative 2 121

Figure 5: Map of Alternative 3 129

Figure 6: Map of Alternative 4 137

Figure 7: Annual Visitation, 1980-2009 201

Figure 8: Monthly Visitation, 2005–2009 202

Figure 9: Overnight Stays, 1979-2009 207



Chequamegon Point Lighthouse, Long Island

CHAPTER 1: BACKGROUND



Sea Stack



Devils Island Light



Sea Cave

A GUIDE TO THIS DOCUMENT

This Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement for Apostle Islands National Lakeshore is organized in accordance with the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act, the National Park Service's "Park Planning Program Standards," and Director's Order 12 and Handbook: "Conservation Planning, Environmental Analysis, and Decision Making."

Chapter 1: Introduction sets the framework for the entire document. It describes why the plan is being prepared and what needs it must address. It gives guidance for the management alternatives that are being considered—guidance that is based on the park's legislation, its purpose, the significance of its resources, special mandates and administrative commitments, and servicewide laws and policies.

The chapter also details the planning opportunities and issues that were raised during public scoping meetings and initial planning team efforts; the alternatives in chapter 3 address these issues and concerns. In addition, the introduction defines the scope of the environmental impact analysis—specifically what impact topics were or were not analyzed in detail. The chapter concludes with a description of next steps in the planning process and caveats on implementation of the plan.

Chapter 2: Wilderness Management Directions focuses on management of the Gaylord Nelson Wilderness, describing programmatic management directions and policies that would not vary between alternatives—these directions and policies would be followed regardless of which

alternative was selected for the *General Management Plan / Wilderness Management Plan*. Information in this section is more administrative/operational in nature and would not be assessed in the environmental consequences chapter. Topics that are covered here include the minimum requirement process, accessibility, emergency services, science and research, campsite design, maintenance, organization and responsibilities for wilderness management, and monitoring of wilderness character. The chapter does not cover management zoning, user capacity indicators and standards, and public facilities, which are included in chapter 3.

Chapter 3: Alternatives, Including the Preferred Alternative, begins by describing the development of the alternatives and identifies the management zones that would be used to manage the park in the future. It includes the continuation of current management practices and trends in the park (alternative 1, no action). Three alternatives for managing the park, the preferred alternative (alternative 2) and alternatives 3 and 4, are next presented. Mitigative measures proposed to minimize or eliminate the impacts of some proposed actions in the alternatives are described, followed by a discussion of future studies or implementation plans that would be needed. The environmentally preferable alternative is identified next, followed by a discussion of alternatives or actions that were considered but dismissed from detailed evaluation. The chapter concludes with summary tables of the alternatives and the environmental consequences of implementing those alternatives.

Chapter 4: The Affected Environment describes those areas and resources that

would be affected by implementing the actions contained in the alternatives. It is organized according to the following topics: natural resources, cultural resources, wilderness character, visitor use and experience, socioeconomic environment, and park operations.

Chapter 5: Environmental Consequences analyzes the impacts of implementing the alternatives on topics described in the “Affected Environment” chapter. Methods that were used for assessing the impacts in terms of the intensity, type, and duration of impacts are outlined at the beginning of the chapter.

Chapter 6: Consultation and Coordination describes the history of public and agency coordination during the planning effort, including American Indian consultations, and any future compliance requirements. It lists agencies and organizations that received a copy of the draft document. This chapter also includes agency responses to the concerns and identifies the letters and internet comments related to each concern. Copies of those letters and internet concerns are in appendix F.

Appendixes, References, a list of Preparers and Consultants, and an Index are found at the end of the document.

INTRODUCTION AND PURPOSE AND NEED FOR THE PLAN

Why The National Park Service Does General Management Planning

The National Parks and Recreation Act of 1978 requires each unit of the National Park Service (NPS) to have a general management plan (GMP); and NPS *Management Policies 2006* states “[t]he Service will maintain a management plan for each unit of the national park system” (2.3.1 General Management Planning). So what is the value, or usefulness, of general management planning?

The purpose of a general management plan is to ensure that a national park system unit (park unit) has a clearly defined direction for resource preservation and visitor use to best achieve the National Park Service’s mandate to preserve resources unimpaired for the enjoyment of future generations. In addition, general management planning makes the National Park Service more effective, collaborative, and accountable by

- providing a balance between continuity and adaptability in decision making—This defines the desired conditions to be achieved and maintained in a park unit and provides a touchstone that allows NPS managers and staff to constantly adapt their actions to changing situations, while staying focused on what is most important about the park unit.
- analyzing the park unit in relation to its surrounding ecosystem, cultural setting, and community—This helps NPS managers and staff understand how the park unit can interrelate with neighbors and others in ways that are ecologically, socially, and economically sustainable. Decisions made within such a larger context are more likely to be successful over time.
- affording everyone who has a stake in decisions affecting a park unit an opportunity to be involved in the planning process and to understand the decisions that are made—Park units are often the focus of intense public interest. Public involvement throughout the planning process provides focused opportunities for NPS managers and staff to interact with the public and learn about public concerns, expectations, and values. Public involvement also provides opportunities for NPS managers and staff to share information about the park unit’s purpose and significance, as well as opportunities and constraints for the management of park unit lands.

The ultimate outcome of general management planning for park units is an agreement among the National Park Service, its partners, and the public on why each area is managed as part of the national park system, what resource conditions and visitor experiences should exist, and how those conditions can best be achieved and maintained over time.

This *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement* presents and analyzes four alternatives for future direction of the management and use of Apostle Islands National Lakeshore (see figure 1). Alternative 2 is the National Park Service’s preferred alternative.

The potential environmental impacts of all alternatives have been identified and assessed.

General management plans are intended to be long-term documents that establish and articulate a management philosophy and framework for decision making and problem

solving in the parks. General management plans usually provide guidance for 15–20 years.

BRIEF DESCRIPTION OF THE PARK

Apostle Islands National Lakeshore, near the tip of the Bayfield Peninsula in northern Wisconsin, includes 21 islands in Lake Superior and a 12-mile-long narrow strip of mainland shoreline (see figure 2). The park is located in Bayfield and Ashland counties, within the ancestral homeland of the Ojibwe people. Established by an act of Congress (Public Law 91-424) on September 26, 1970, the purpose of the park is “to conserve and develop for the benefit, inspiration, education, recreational use, and enjoyment of the public” the islands and their related geographic, scenic, and scientific values (see appendix A for the park’s enabling legislation).

Apostle Islands National Lakeshore encompasses 69,372 acres, of which 27,323 acres are submerged lands in Lake Superior; the park boundary extends a 0.25 mile from the shore of the mainland and from each island. Eighty percent of the land area of the park was designated as wilderness in December 2004. The islands range in size from 3-acre Gull Island to 10,054-acre Stockton Island. The islands are spread out over a portion of Lake Superior nearly 290,000 acres in size—an area larger than Rocky Mountain National Park or Mount Rainier National Park.

A variety of scenic features can be found on the islands, including examples of some of the earliest and latest events of geologic history in the lower 48 states. The park features pristine stretches of sand beaches and coves; spectacular sea caves; some of the largest stands of remnant old-growth forests in the upper Midwest; a diverse population of birds, mammals, amphibians, and fish; and the largest collection of national register lighthouses and lighthouse complexes in the national park system. People have used the

islands for thousands of years. During the historic period, people constructed residences and started farms, fishing operations, brown-stone quarries, and logging camps on the islands. Several of these historic sites are listed in the National Register of Historic Places.

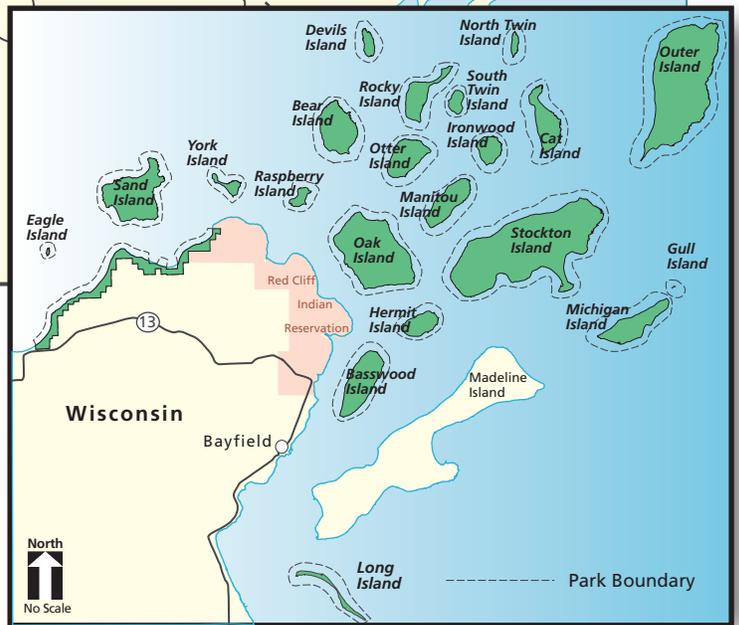
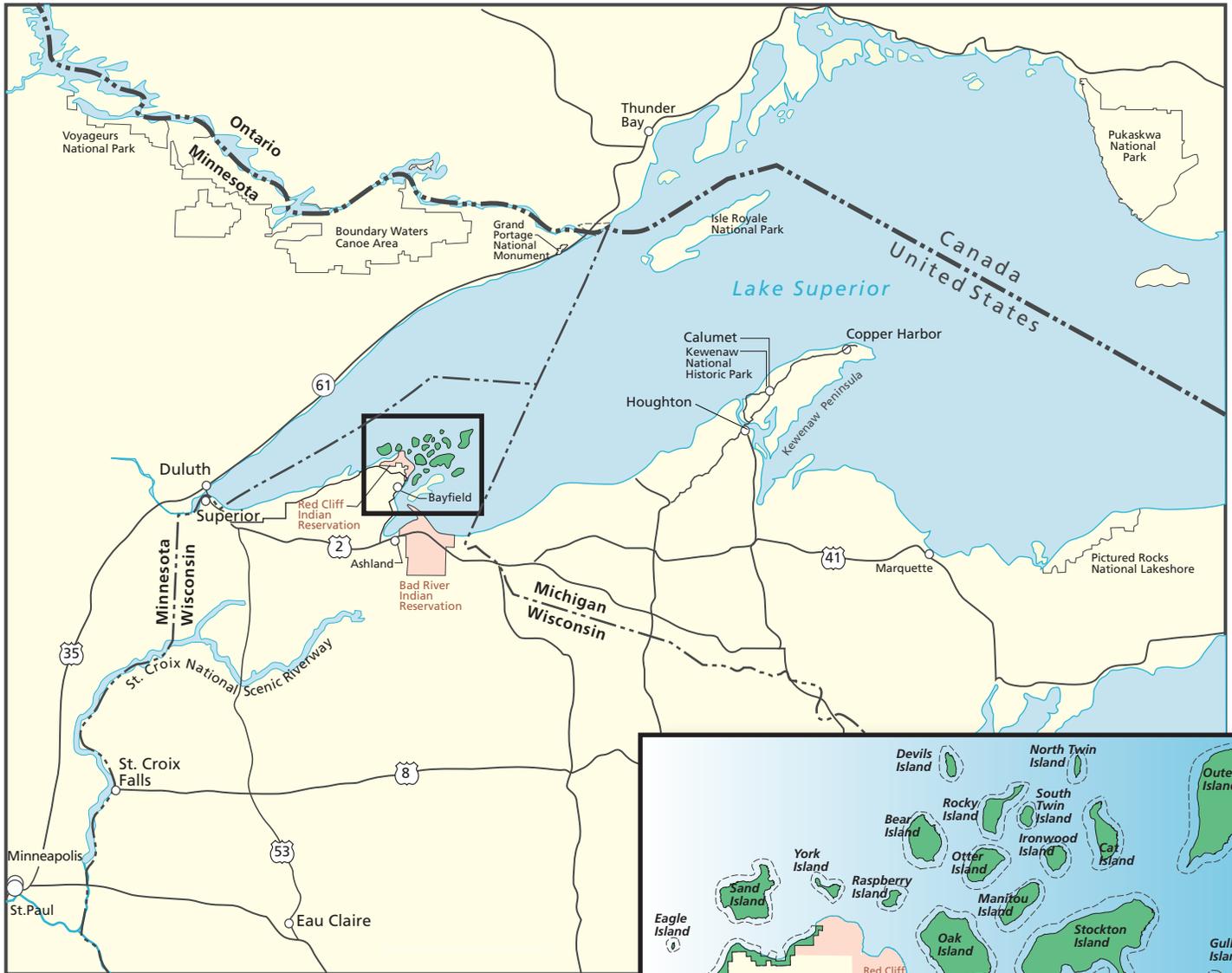
PURPOSE OF THE PLAN

The approved general management plan / wilderness management plan will be the basic document for managing Apostle Islands National Lakeshore for the next 15–20 years. The purposes of this plan are as follows:

- Confirm the purpose, significance, and special mandates of Apostle Islands National Lakeshore.
- Clearly define resource conditions and visitor uses and experiences to be achieved in Apostle Islands National Lakeshore.
- Provide a framework for park managers to use when making decisions about how to best protect park resources, how to provide quality visitor uses and experiences, how to manage visitor use, and what types of facilities, if any, to develop in/near Apostle Islands National Lakeshore.
- Provide direction for management of the Gaylord Nelson Wilderness, including its resources, visitors, and visitor facilities.

The planning process also ensures that this foundation for decision making has been developed in consultation with interested stakeholders and adopted by the NPS leadership after an adequate analysis of the benefits and adverse impacts and economic costs of alternative courses of action.

Legislation establishing the National Park Service as an agency and governing its management provides the fundamental direction for the administration of Apostle Islands National Lakeshore (and other units



0 25 50 Miles

Apostle Islands National Lakeshore
 Indian Reservation



No Scale

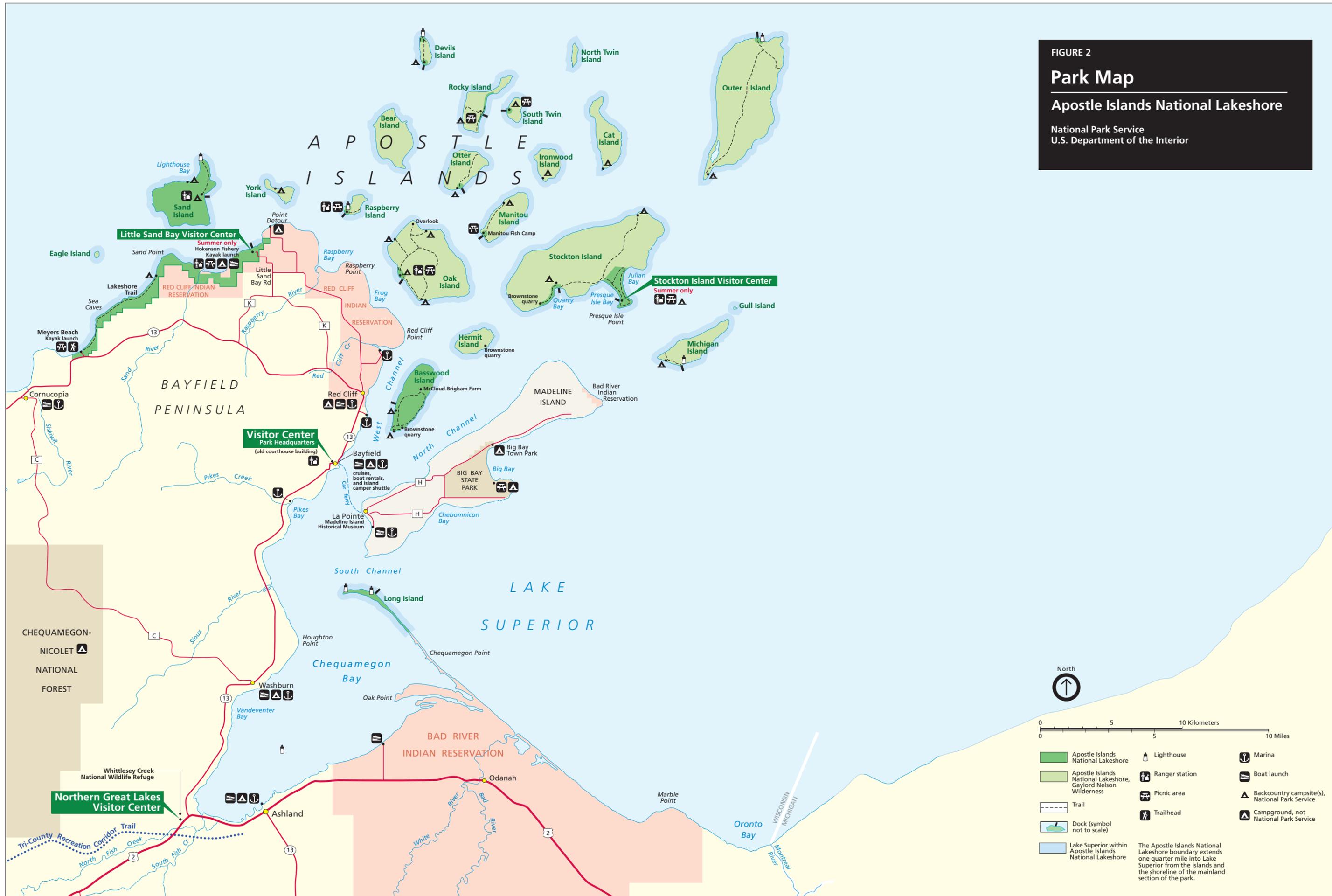
FIGURE 1

Location

Apostle Islands National Lakeshore

National Park Service
 U.S. Department of the Interior
 DSC • 633 • 20077 • June 2009

FIGURE 2
Park Map
Apostle Islands National Lakeshore
 National Park Service
 U.S. Department of the Interior



and programs of the national park system). This general management plan will build on these laws and the legislation that established Apostle Islands National Lakeshore to provide a vision for the park's future.

The "Desired Conditions and Related Servicewide Legal and Policy Requirements" section calls the reader's attention to topics that are important to understanding the management direction at Apostle Islands National Lakeshore. The alternatives in this general management plan address the desired future conditions that are not mandated by law and policy and must be determined through a planning process.

NEED FOR THE PLAN

This new management plan for Apostle Islands National Lakeshore is necessary because the last comprehensive planning effort for the park was completed in 1989. With major changes in visitor use patterns (in particular, a substantial growth in kayaking in the area), new development needs, and the changes resulting from the designation of wilderness in December 2004, the 1989 plan is outdated.

Management direction is needed for Long Island, which was acquired just before the 1989 plan was finalized. The plan also needs to

address other events that have occurred since 1989, including the development of the multi-agency Northern Great Lakes Visitor Center, as well as the sustainability of facilities, services, and park operations in light of rising costs and climate change. Each of these changes has implications for how visitors access and use the area, how facilities need to be used to support those uses, how the area's resources are managed, and how the National Park Service manages its operations.

A general management plan also is necessary to meet the requirements of the National Parks and Recreation Act of 1978, NPS *Management Policies 2006*, and NPS policy, which mandate development of a general management plan for each unit in the national park system. The National Parks and Recreation Act also requires that all general management plans include the following:

1. measures for the preservation of resources
2. indications of the types and general intensities of development (including visitor circulation and transportation patterns, systems, and modes), including general locations, timing of implementation, and anticipated costs
3. identification of and implementation commitments for visitor carrying capacities
4. indications of potential boundary modifications

FOUNDATION FOR PLANNING AND MANAGEMENT

PARK PURPOSE

Purpose statements convey the reason(s) for which a national park unit was set aside as part of the national park system. Grounded in an analysis of park legislation and legislative history, purpose statements also provide primary criteria against which the appropriateness of plan recommendations, operational decisions, and actions are tested—they provide the foundation for the park’s management and use.

The purposes of Apostle Islands National Lakeshore include the following:

- Conserve and protect the outstanding collection of scenic, scientific, biological, geological, historical, archeological, cultural, and wilderness features and values of Apostle Islands National Lakeshore.
- Provide opportunities for the benefit, inspiration, education, recreational use, and enjoyment of Apostle Islands National Lakeshore.
- Secure the benefits of an enduring resource of wilderness in Apostle Islands National Lakeshore’s Gaylord Nelson Wilderness for present and future generations of Americans.

PARK SIGNIFICANCE

Significance statements capture the essence of the park’s importance to our country’s natural and cultural heritage. Significance statements do not inventory park resources; rather, they describe the park’s distinctiveness and why the area is important within its regional, national, and international contexts. Significance statements answer questions such as the following: Why are Apostle Islands’ resources distinctive? What do they contribute to our

natural or cultural heritage? Defining the park’s significance helps managers make decisions and focus their efforts on the protection of resources and enjoyment of those values that are directly related to the park’s purpose.

The significance statements for Apostle Islands National Lakeshore are as follows:

- The Apostle Islands archipelago contains scientifically important geologic features, including a highly diverse and stunningly beautiful array of coastal landforms that retain a high degree of ecological integrity.
- Shaped and isolated by Lake Superior and located where northern hardwoods and boreal forests meet, the islands of the park sustain rare communities, habitats, and species of plants and animals. Some of these communities are remnants of ancient forests, providing a rare glimpse into the past.
- The Apostle Islands are the traditional home of the Ojibwe people and integral to their culture. They have used the natural resources of the Apostle Islands area for centuries to sustain their way of life, and continue to do so today.
- The isolation and remoteness of the archipelago has preserved an unparalleled variety of historic and archeological resources reflecting human response to the Great Lakes maritime environment.
- The Apostle Islands National Lakeshore has the largest and finest collection of lighthouses in the country.
- Despite hundreds of years of human occupation and use, the Apostle Islands and Lake Superior remain among the wildest places in the Great Lakes, where the unbridled forces of nature prevail.

- The rare combination of remote but accessible scenery, geography, and both open and protected waters affords unparalleled freshwater sailing, boating, sea kayaking, and fishing opportunities.
- The “island experience” of the Apostle Islands, which includes quiet, relative solitude, and clear night skies, continues to provide, as it has for generations, a recreational and rejuvenating experience for people seeking relief from the stresses of their everyday lives.

FUNDAMENTAL RESOURCES AND VALUES

Fundamental resources and values are systems, processes, features, visitor experiences, stories, and scenes that deserve primary consideration in planning and management because they are critical to maintaining the park’s purpose and significance. The following fundamental resources and values have been identified for Apostle Islands National Lakeshore.

Coastal Features and Processes

- diverse collection and high degree of integrity of coastal features and processes such as tombolos, sand spits, cusped forelands, barrier spits, beaches, sandstone cliffs, clay bluffs, shoals, and lagoons

Natural Environment

- rare plant communities such as dune/lagoon complexes, unbrowsed forest communities, old-growth stands, and cliff communities
- important bird habitat including resting areas for migratory birds, nesting areas for summer residents including colonial birds, and critical piping plover habitat
- clean air and water, including healthy aquatic environments

Ethnographic Resources

- the resources associated with the Ojibwe homeland, such as ethno-botanical resources and the stories of the Ojibwe cultural connections

Historical and Archeological Resources

- resource extraction sites, including quarries, logging camps, and fishing sites
- pioneer settlements
- historic recreational facilities
- archeological resources, including submerged cultural resources

Light Stations and Cultural Landscapes

- historic structures associated with lighthouses
- cultural landscapes associated with the light stations (e.g., ground clearing, gardens, relationships to old-growth forests due to lighthouse reservations)

Stories and Collections

- continuing and evolving stories of the area’s cultural heritage, including oral histories, diaries, archives, photos, documentation, administrative history
- stories and related documents associated with the lighthouses and lightkeepers

Wilderness Values

- wilderness qualities (high degree of naturalness and primitive recreation opportunities) including the phenomenon of re-wilding; lands that were settled, logged, and quarried are naturally returning to their former condition
- sense of discovery associated with viewing and learning about the historic and continuing relationship between humans and the natural resources of the islands
- sense of adventure and challenge where “the lake is the boss”

Recreational Opportunities

- access to open and protected waters
- the challenge and opportunity of safely navigating and recreating on Lake Superior
- diverse marine recreational activities
- access to sea caves and shipwrecks

The “Island Experience”

- sensory experiences such as solitude, isolation, challenge, and adventure
- natural light and soundscapes
- discovering and accessing pristine beaches
- great vistas including views of and from the lighthouses, undeveloped shorelines, long-distance views across the lake, views of the horizon, views of sailboats, views of wildlife

PRIMARY INTERPRETIVE THEMES

Interpretive themes are ideas, concepts, or stories that are central to the park’s purpose, significance, identity, and visitor experience. The primary interpretive themes define concepts that every visitor should have the opportunity to learn. Primary themes also provide the framework for the park’s interpretation and educational programs; influence the visitor experience; and provide direction for planners and designers of the park’s exhibits, publications, and audiovisual programs. Subsequent interpretive planning

may elaborate on these primary themes. Following are the primary interpretive themes for Apostle Islands National Lakeshore—the most important ideas or concepts to be communicated to the public about the park:

- At the center of the continent, Lake Superior has long served as a highway of commerce connecting the Apostle Islands region to a global economy, thereby transforming the landscape and its people.
- The stories of Apostle Islands National Lakeshore reveal themselves along edges where water meets land and sky, field meets forest, culture meets culture, and past meets future.
- After being altered by centuries of human use, the Apostle Islands’ environment is regaining its wilderness characteristics.
- The Apostle Islands have long attracted people to Lake Superior’s shore to enjoy world-class opportunities for a variety of recreational experiences.
- The Apostle Islands’ protected plant and animal communities, remote yet not removed from outside influences, serve as indicators to help measure the pulse of the planet.
- Lake Superior defines the Apostle Islands, shapes its ecosystems, and sustains life in the region.
- Dynamic and uncontrollable, Lake Superior is a force to be encountered on its own terms.

SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS

Special mandates are legislative or judicial requirements that are specific to a particular unit of the national park system. They are typically mandated by Congress or by the courts. Administrative commitments are agreements that have been reached through formal, documented processes. Examples include cooperative agreements.

TREATY RIGHTS AND OTHER RESERVED TRIBAL RIGHTS

The Apostle Islands region is located within the heart of the ancestral homeland of the Ojibwe people. As such, the area's significance to Ojibwe traditions and culture cannot be overstated. Ojibwe treaty rights will continue to be honored under all of the alternatives being considered in this document—none of the alternatives being considered would impede, prevent, or in any way negate tribal reserved or treaty guaranteed rights. The general management plan will not, and indeed cannot, affect the harvesting of plants or plant materials, hunting, fishing (including commercial fishing in Lake Superior), or trapping rights, although with appropriate consultation with affected tribal governments it may affect the manner in which treaty rights are exercised. For the Apostle Island National Lakeshore, these rights are reserved by the tribes and guaranteed by the United States in the treaties of 1842 and 1854, and have been affirmed in a number of court cases, including *State of Wisconsin v. Gurnoe* and *Lac Courte Oreilles Band of Chippewa Indians v. Voigt*. In addition, for those portions of the park that might lie within the boundaries of their reservations, the Red Cliff Band of Lake Superior Chippewa Indians and the Bad River Band of the Lake Superior Tribe of Chippewa Indians enjoy a number of other rights of self-governance and self-determination that are

reserved and protected in the Treaty of 1854 and other federal enactments.

WILDERNESS

The Gaylor Nelson Wilderness, established on December 8, 2004, includes 80% of the land area of the park (approximately 33,500 acres of the park's 42,160-acre land base). The wilderness includes all of Bear, Cat, Eagle, Gull, Hermit, Ironwood, North Twin, and York islands, and most of Michigan, Otter, Outer, Raspberry, Rocky, South Twin, Devils, Manitou, Oak, and Stockton islands. The waters of Lake Superior within the park are not included in the wilderness area, nor are the lighthouses or other existing developed areas of the park. No parts of Sand, Basswood, or Long island are included in the wilderness, and neither is the park's 12-mile mainland strip.

HUNTING, FISHING, AND TRAPPING

The enabling legislation (Public Law [PL] 91-424) of Apostle Island National Lakeshore permits hunting, fishing, and trapping in the park in accordance with appropriate laws of Wisconsin and the United States. The legislation also gives park managers the flexibility to “designate zones where, and establish periods when, no hunting, trapping, or fishing shall be permitted for reasons of public safety, administration, fish or wildlife management, or public use and enjoyment.”

USE OF SNOWMOBILES AND OFF-ROAD VEHICLES IN THE PARK

Special regulations specific to the park, listed in 36 *Code of Federal Regulations* Part 7, Section (§) 7.82, identify restrictions involving

the use and operation of snowmobiles and off-road vehicles, and allow the use of ice augers and fishing activities under applicable state law.

NAVIGATIONAL AIDS

Under federal law, navigational aids (lights) continue under the jurisdiction of the U.S. Coast Guard so long as they are required, while the National Park Service manages the historic structures and facilities associated with the navigational aids.

BAYFIELD VISITOR CENTER GSA LEASE

The Bayfield park headquarters and visitor center in the Old Bayfield County Courthouse is leased from the city of Bayfield by the General Services Administration (GSA). The annual lease covers administrative office space, parking space, the visitor center, and building maintenance and janitorial services. The lease expires on July 16, 2012.

ROYS POINT GSA LEASE

The Roys Point maintenance facility, including the warehouse, office space, equipment storage, shops, and dock space, is leased from Roys Point Partners by the General Services Administration. The lease expired in 2008, but has been renewed for the short term.

APOSTLE ISLANDS CRUISES CONTRACT

Apostle Islands Cruises is authorized by the National Park Service as a park concessioner to serve the public within the Apostle Islands National Lakeshore. The concessioner offers a variety of narrated sightseeing cruises, island shuttles, and charter trips to islands and offshore locations throughout the park. Trips leave from Bayfield daily from late May to the

middle of October. The contract expires at the end of 2015.

AGREEMENT WITH THE TOWN OF RUSSELL REGARDING OPERATION OF LITTLE SAND BAY

The Town of Russell owns and manages recreational facilities on an 11-acre tract within the park at Little Sand Bay. The town and National Park Service signed a memorandum of understanding, effective December 31, 2004, regarding operation of the Little Sand Bay area. The agreement covers shared use of the sewage treatment system, restrooms, shower facilities, and drinking water; maintaining the breakwall, boat ramp, and navigation lights; dredging the harbor and storing dredged materials; removing snow and roadside mowing; maintaining signs; maintaining town access to the memorial on York Island; and working together on kayak launching area issues. Although the agreement expired at the end of 2009, the National Park Service is negotiating with the town and expects the agreement to be renewed.

AGREEMENT WITH THE STATE OF WISCONSIN REGARDING THE PROTECTION OF SUBMERGED CULTURAL RESOURCES AND BOTTOMLANDS

The National Park Service signed a memorandum of understanding with the state of Wisconsin Historical Society regarding the protection of submerged cultural resources on December 1, 2002. The agreement expired in December 2007, but is being negotiated and is expected to be renewed.

INTERAGENCY AGREEMENT ON THE NORTHERN GREAT LAKES VISITOR CENTER

The National Park Service has a memorandum of understanding with the U.S. Forest Service to cover the costs of operating the visitor center near Ashland. Apostle Islands National Lakeshore is a partner in this center and oversees the front desk operations and the facility management program. The agreement expires at the end of 2011.

MEMORANDUM OF UNDERSTANDING WITH THE OJIBWE BANDS

The National Park Service is developing a memorandum of understanding with Ojibwe bands possessing rights that were reserved under the treaties of 1842 and 1854 with respect to Apostle Islands National Lakeshore. This agreement will describe the manner in which these rights may be exercised in the off-reservation portions of Apostle Islands National Lakeshore.

OTHER VALID RIGHTS

Several individuals have life-lease use and occupancy rights in the park. There are several inholdings, public roads, rights-of-way, and mineral rights held by the townships of Russell and Bayfield, and the counties of Bayfield and Ashland. Above- and below-ground utility lines owned by the Bayfield Electric Cooperative Association and Wisconsin Bell also exist. The general management plan will not affect the owners of various valid property rights within the park boundary. This includes county and township owned lands and mineral right owners. The National Park Service will continue to honor and respect the valid rights of these entities and individuals under all of the alternatives.

DESIRED CONDITIONS AND RELATED SERVICEWIDE LEGAL AND POLICY REQUIREMENTS

NPS *Management Policies 2006* states that “The National Park Service will use all available authorities to protect lands and resources within units of the national park system.” The purpose of this section is to summarize the major legal and policy requirements governing park management. The National Park Service continues to strive to implement these requirements with or without a general management plan. Table 1 provides an overview of the legal and policy requirements that relate to and are

particularly important to the management of Apostle Islands National Lakeshore. The strategies listed under the topics are examples of actions that will be taken and are not intended to be all-inclusive—specific strategies and management actions and prioritization of these actions will be addressed in future implementation plans, such as the resource stewardship strategy. Funding and staffing constraints also will affect the implementation of these strategies.

Table 1: Desired Conditions and Strategies with Related Servicewide Legal and Policy Requirements

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Relations with Private and Public Organizations, Owners of Adjacent Land, and Governmental Agencies</p>	<p>NPS <i>Management Policies 2006</i> emphasize consultation and cooperation with local/state/tribal/ federal entities (5.2.1) and calls for cooperative conservation beyond park boundaries (1.6) and for cooperative planning (2.3.1.8). DO 75A, “Civic Engagement and Public Involvement” provides further guidance.</p> <p>Desired Conditions: Apostle Islands National Lakeshore is managed as part of a greater ecological, social, economic, and cultural system.</p> <p>Good relations are maintained with adjacent landowners, surrounding communities, and private and public groups that affect and are affected by Apostle Islands National Lakeshore. The area is managed proactively to resolve external issues and concerns and ensure that area values are not compromised.</p> <p>Because the park is a part of a larger regional environment, the National Park Service and its neighbors work cooperatively with others to anticipate, avoid, and resolve potential conflicts; protect the park’s resources; and address mutual interests in the quality of life for community residents. Regional cooperation involves federal, state, and local agencies, Indian tribes, neighboring landowners, and all other concerned parties.</p> <p>Strategies: NPS staff will continue to establish and foster partnerships with public and private organizations to achieve the purposes of Apostle Islands National Lakeshore. Partnerships will continue to be sought for resource protection, research, education, and visitor enjoyment purposes.</p> <p>To foster a spirit of cooperation with neighbors and encourage compatible adjacent land uses, NPS staff will continue to keep landowners, land managers, local governments, and the public informed about Apostle Islands National Lakeshore management activities. Likewise, NPS managers will seek relationships with adjacent landowners and jurisdictions that will</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Relations with Private and Public Organizations, Owners of Adjacent Land, and Governmental Agencies (continued)</p>	<p>keep NPS managers informed about their activities that may affect the park. Periodic consultations will continue with landowners who might be affected by visitors and management actions. NPS staff will continue to respond promptly to conflicts that arise over NPS activities, visitor access, and proposed activities and developments on adjacent lands that could affect Apostle Islands National Lakeshore. Information will be shared with adjacent landowners on resources, natural processes, and threats to resources. NPS staff may provide technical and management assistance to landowners to address issues of mutual interest.</p> <p>NPS staff will continue to work closely with local, state, and federal agencies and tribal governments whose programs affect or are affected by activities in Apostle Islands National Lakeshore. NPS managers will continue to pursue cooperative regional planning whenever possible to integrate the park into issues of regional concern.</p> <p>NPS staff will continue to work closely with local, state, and federal agencies and tribal governments to foster interagency training, cooperation, and mutual assistance that affords the highest level of protection and security for visitors and park resources.</p>
<p>Relations with the City of Bayfield, Town of Russell, Town of Bayfield, and Bayfield and Ashland Counties</p>	<p>As stated above, NPS <i>Management Policies</i> emphasize consultation and cooperation with local governments and for cooperative planning.</p> <p>Desired Conditions: NPS staff continues its close working relationships with the City of Bayfield, Town of Russell, and Bayfield and Ashland counties. NPS staff and local officials maintain a high level of trust and goodwill. Local government officials feel they have an important stake in Apostle Islands National Lakeshore, and NPS staff feel they have an important stake in the local communities. NPS managers are familiar with local issues and concerns.</p> <p>Strategies: NPS staff will continue to regularly communicate and meet with local government officials to identify problems and concerns facing the local governments and Apostle Islands National Lakeshore, and actions that can be taken to address these problems and concerns.</p> <p>NPS managers will continue to work with the Town of Russell to address mutual issues and improve the quality of the visitor experience at Little Sand Bay.</p> <p>Local government officials will continue to be kept informed of planning and other actions in Apostle Islands National Lakeshore that could affect the local governments. Likewise, NPS managers will seek relationships with local government officials that will keep NPS managers informed about their activities that may affect the park. NPS staff will continue to work with local government law enforcement, emergency services, and community education programs.</p> <p>When appropriate, NPS staff will provide technical and management assistance to the local governments, including sharing information and resources, to address problems and issues of mutual interest, such as growth in park visitation and ecotourism. NPS staff will continue to be involved in community-based efforts. NPS staff will participate in community planning when it may influence the park.</p>
<p>Government-to-Government Relations between American Indian Tribes and Apostle Islands National Lakeshore</p>	<p>The Presidential Memorandum of April 29, 1994, Executive Order 13175: "Consultation and Coordination with Indian Tribal Governments", Executive Order 13007: "Indian Sacred Sites," a variety of federal statutes (e.g., National Historic Preservation Act), and NPS <i>Management Policies 2006</i> (1.11.1 and 5.3.5.3) call for the National Park Service to maintain a government-to-government relationship with federally recognized tribal governments.</p> <p>Apostle Islands National Lakeshore is of special importance to the Red Cliff and Bad River Bands of Lake Superior Chippewa, and the tribes are also important neighbors for the park. Part of the park's mainland unit is within the Red Cliff reservation, which creates the potential for park visitors to inadvertently trespass on reservation lands. The remaining land areas of the park are within territory that was ceded as part of the 1842 Treaty with the Chippewa. Within this ceded territory, the Chippewa reserved their rights to hunt and trap. The Bad River</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Government-to-Government Relations between American Indian Tribes and Apostle Islands National Lakeshore (continued)</p>	<p>Band also believes that Long Island is included in their reservation boundary (a belief that is not disputed or supported by the National Park Service due to vague treaty language).</p> <p>Desired Conditions: NPS staff and the tribes culturally affiliated with the park maintain positive, productive, government-to-government relationships. NPS managers will seek relations with adjacent tribal governments that will keep NPS managers and tribes informed about activities that may affect the park or its neighbors. The Chippewa’s reserved hunting and trapping rights are recognized and respected by the National Park Service. Park managers respect the viewpoints and needs of the tribes, continue to promptly address conflicts that occur, and consider American Indian values in area management and operation.</p> <p>Apostle Islands National Lakeshore is a good neighbor to the Bad River Band and Red Cliff Band by working together when joint cooperation might be appropriate—sharing research and knowledge on the resources, and interpreting the resources of Apostle Islands National Lakeshore.</p> <p>Strategies: NPS staff will continue to regularly meet and communicate with tribal officials to identify problems and issues of mutual concern, and work together to take actions to address these problems and issues.</p> <p>Tribal officials will continue to be kept informed of planning and other actions in the park that could affect the tribes. Likewise, NPS managers will seek relationships with tribal officials that will keep NPS managers informed about their activities that may affect the park.</p> <p>When appropriate, NPS staff and the tribes will share information and resources to address problems and issues of mutual concern.</p> <p>NPS staff will continue to recognize the past and continuing presence of native peoples in the region.</p> <p>NPS staff will consult with the tribes to develop and accomplish the programs of Apostle Islands National Lakeshore in a way that respects the beliefs, traditions, and other cultural values of the tribes.</p> <p>NPS staff will accommodate reasonable access to traditional use areas, once identified through further consultation and research, in ways consistent with park purposes and American Indian values and that avoid adversely affecting the physical integrity of such sites and resources.</p> <p>NPS staff will work to better educate visitors about tribal lands surrounding the mainland unit and the need to avoid trespassing on these lands.</p> <p>NPS staff will work to involve the tribes in potential future commercial activities within the park.</p> <p>NPS staff will work with the tribes to explore options to contract services consistent with the Indian Self-Determination Act (PL 93-638).</p> <p>NPS staff will conduct appropriate ethnographic, ethnohistorical, or cultural anthropological research in conjunction with, and in cooperation with, American Indian tribes traditionally associated with Apostle Islands National Lakeshore.</p> <p>NPS managers will work closely with the Bad River Band of Lake Superior Tribe of Chippewa Indians on resource or visitor management issues of mutual concern on Long Island.</p> <p>NPS managers will work closely with the Red Cliff Band of Lake Superior Chippewa Indians on resource and visitor management issues on those areas of the mainland unit within the boundaries of the Red Cliff reservation.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Government-to-Government Relations between American Indian Tribes and Apostle Islands National Lakeshore (continued)</p>	<p>NPS staff will work closely with the Great Lakes Indian Fish and Wildlife Commission and tribal law enforcement and conservation officials to foster cooperation, support, mutual assistance, and close working relationships relating to the discovery, investigation, enforcement, and prosecution of NPS and tribal laws involving wildlife management, resource protection, and visitor safety.</p>
	<p>Natural Resources</p>
<p>Ecosystem Management</p>	<p>NPS <i>Management Policies 2006</i> (1.6, 4.1, 4.1.4, 4.4.1) provides general direction for managing park units from an ecosystem perspective.</p> <p>Apostle Islands National Lakeshore is part of a greater ecological, social, economic, and cultural system. Activities that take place outside of the park affect, sometimes profoundly, the Park Service’s ability to protect natural resources inside the park. As section 1.6 of NPS <i>Management Policies 2006</i> states, “Recognizing that parks are integral parts of larger regional environments, and to support its primary concern of protecting park resources and values, the Service will work cooperatively with others to anticipate, avoid, and resolve potential conflicts; protect park resources and values; provide for visitor enjoyment; and address mutual interests in the quality of life of community residents, including matters such as compatible economic development and resource and environmental protection.”</p> <p>Thus it is important to manage Apostle Islands National Lakeshore from an ecosystem perspective, where internal and external factors affecting visitor use, environmental quality, and resource stewardship goals are considered at a scale appropriate to their impact on affected resources.</p> <p>Ecosystem management is a collaborative approach to natural and cultural resource management that integrates scientific knowledge of ecological relationships with resource stewardship practices for the goal of sustainable ecological, cultural, and socioeconomic systems. Approaches to ecosystem management are varied and occur at many levels. Achieving the desired future conditions stated in this plan for park resources requires that a regional perspective be considered, recognizing that actions taken on lands surrounding the park directly and indirectly affect the park. Many of the threats to park resources, such as airborne contaminants and invasive species, come from outside of the park boundaries, requiring an ecosystem approach to understand and manage the park’s natural resources.</p> <p>Imperative in this effort is understanding the health or condition of the ecosystem. Key indicators of resource or system conditions must be identified and monitored.</p> <p>Cooperation, coordination, negotiation, and partnerships with agencies and neighbors are also crucial to meeting or maintaining desired future conditions for the park while recognizing the need to accommodate multiple uses on a regional scale. This approach to ecosystem management may involve many parties or cooperative arrangements with state agencies or tribes to obtain a better understanding of trans-boundary issues.</p> <p>Desired Conditions: Apostle Islands National Lakeshore is managed holistically, from an ecosystem perspective, where internal and external factors affecting visitor use, environmental quality, and resource stewardship goals are considered at a scale appropriate to their impact on affected resources. The National Park Service is a leader in resource stewardship and conservation of ecosystems within and outside the park. Natural processes and population fluctuations occur within a natural range of variability with as little human intervention as possible. Park resources and visitors are managed considering the ecological and social conditions of the park and surrounding area. Ecological integrity is maintained or restored in areas not developed for visitors. NPS managers adapt to changing ecological and social conditions within and external to the park and continue as partners in regional planning and land and water management. The park is managed proactively to resolve</p>

TOPIC Desired Conditions and Strategies for Apostle Islands National Lakeshore	
Ecosystem Management (continued)	<p>external issues and concerns to ensure that park values are not compromised.</p> <p>Strategies: NPS staff will continue to participate in and encourage ongoing partnerships with local, state, tribal, and federal agencies, educational institutions, and other organizations in programs that have importance within and beyond park boundaries. Cooperative agreements, partnerships, and other arrangements can be used to set an example in resource conservation and innovation, and to facilitate research related to park resources and their management. Partnerships important to the long-term viability of natural and cultural resources include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • inventorying, monitoring, and managing terrestrial resources • managing wildlife across human-created boundaries, such as jurisdictions and property lines • monitoring and managing aquatic resources (e.g., water quality), and enforcing regulations • managing nonnative invasive species • supporting scientific research and ecological monitoring to increase understanding of park resources, natural processes, and human interactions with the environment, and to guide recovery/conservation efforts • approaching all resource management questions from an ecosystem standpoint, taking into account all biological interrelationships • continuing long-term monitoring of the change in condition of cultural and natural resources and related human influences (see natural resources strategies) • identifying management considerations for areas external to the park where ecological processes, natural and cultural resources, and/or human use affect park resources or are closely related to park resource management; initiating joint management actions, agreements, or partnerships to promote resource conservation (see natural resources strategies) • practicing science-based decision making and adaptive management, and incorporating the results of resource monitoring and research into NPS operations • as called for in the park’s “Fire Management Plan” (NPS 2005a), continuing to use prescribed fire as appropriate to reduce hazardous fuel conditions, supplement the ecological role of fire as a natural process, eliminate or reduce nonnative species, protect or restore key plant or animal habitats or communities, and restore or maintain cultural/historic scenes in the park • detecting and investigating illegal activities; apprehending and successfully prosecuting violators; and preventing unauthorized and illegal access and operations through resource education, public safety efforts, and deterrence
Natural Resources and Diversity	<p>Apostle Islands National Lakeshore’s natural resources are a key element in the use and management of the park. Protection, study, and management of natural resources and processes are essential for achieving the purposes of the NPS Organic Act and to ensure that impairment of park resources and values does not occur. NPS <i>Management Policies 2006</i> (4) and Reference Manual #77, “Natural Resource Management,” provide general direction on natural resource management for the park. The National Parks Omnibus Act of 1998 established the framework for integrating natural resource inventories and monitoring into park management. Section 5934 requires the secretary of interior to develop a program of “inventory and monitoring of national park system resources to establish baseline information and to provide information on long-term trends in the condition of national park system resources.</p> <p>Desired Conditions: Apostle Islands National Lakeshore is recognized and valued as an outstanding example of resource stewardship, conservation, education, and public use. The park retains its ecological integrity, including its natural resources and processes. The park continues to support a full range of native species. Natural processes (including wind, sand,</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Natural Resources and Diversity (continued)</p>	<p>and water processes) function as unimpeded as possible. Ecosystem dynamics and population fluctuations occur with as little human intervention as possible. Park resources are conserved “unimpaired” for the enjoyment of future generations. Park resources and values are protected through collaborative efforts with neighbors and partners. Potential threats to the park’s resources are identified early and addressed proactively. Human impacts on resources, such as air and water pollution, are monitored, and harmful effects are minimized, mitigated, or eliminated to the greatest degree possible. Visitors and staff recognize and understand the value of the park’s natural resources. NPS staff uses the best available scientific information and appropriate technology to manage the park’s natural resources.</p> <p>Biologically diverse native communities are protected and restored when appropriate. Particularly sensitive communities, such as sandscapes, are closely monitored and protected. Endemic species and habitats are fully protected. Genetic integrity of native species is protected.</p> <p>“Nonnative species” (also referred to as exotic, alien, or invasive species) are those species that occupy or could occupy park lands as the result of deliberate or accidental human activities. The NPS staff prevents the introduction of nonnative species and provides for their control to minimize the economic, ecological, and human health impacts that these species cause. High priority is given to managing nonnative species that have, or potentially could have, a substantial impact on park resources, and that can reasonably be expected to be successfully controllable. Lower priority is given to nonnative species that have almost no impact on park resources or that probably cannot be successfully controlled.</p> <p>Strategies: Science-based, adaptive, decision making will continue to be followed, with the results of resource monitoring and research incorporated into appropriate aspects of park operations.</p> <p>NPS staff will continue to apply ecological principles to ensure that natural resources are maintained and not impaired. Integrated pest management procedures will continue to be used when necessary to control nonnative organisms or other pests.</p> <p>NPS staff and other scientists will continue to inventory park resources to quantify, locate, and document biotic and abiotic resources and to assess their status and trends. Inventories and monitoring of rare plant communities, native plants, and migratory bird populations in the park will continue.</p> <p>NPS staff and other scientists will continue to conduct long-term, systematic monitoring of resources and processes to discern natural and anthropogenically induced trends, document changes in species or communities, evaluate the effectiveness of management actions taken to protect and restore resources, and mitigate impacts on resources where possible.</p> <p>NPS staff will strive to expand monitoring programs to include geographic areas and resources that are not currently monitored. Partnerships with institutions, agencies, and scientists will be an important component of this endeavor.</p> <p>NPS staff, as part of the Great Lakes Inventory and Monitoring Network, will continue to monitor core indicators (vital signs) of long-term ecological change.</p> <p>NPS staff will work with the U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources, Bad River and Red Cliff Bands of the Lake Superior Chippewa, and the Great Lakes Indian Fish and Wildlife Commission to inventory, monitor, enforce regulations, and manage migratory bird populations and habitats. Migratory bird population habitats will be protected through timing of park activities; application of visitor restrictions or closures when appropriate; and through consultations with the U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources, Great Lakes Indian Fish and Wildlife Commission, and American Indian tribes. NPS staff will participate in regional ecosystem efforts to protect migratory bird species.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Natural Resources and Diversity (continued)</p>	<p>Inventories and monitoring of nonnative plant species will continue. Efforts will continue to control the spread of spotted knapweed and other invasive nonnative species in the park. For species determined to be nonnative and where management appears to be feasible and effective, the NPS staff will: (1) evaluate the species' current or potential impact on park resources; (2) develop and implement nonnative species management plans according to established planning procedures; (3) consult, as appropriate, with federal and state agencies, including the Wisconsin Department of Natural Resources, and (4) invite public review and comment, where appropriate. Programs to manage nonnative species will be designed to avoid causing damage to native species, rare natural ecological communities, natural ecological processes, cultural resources, and human health and safety.</p> <p>Future facilities will be built in previously disturbed areas with as small of a construction footprint as possible. NPS staff will also apply mitigative techniques to minimize the impacts of construction and other activities on park resources.</p> <p>Active restoration efforts will continue in the park, primarily focusing on the eradication of invasive nonnative species and restoration of native plants and animals. For previously or newly disturbed areas that are restored, work will be done using native genetic materials (when available) from the local region to regain maximum habitat value. Should facilities be removed, the disturbed lands will be rehabilitated to restore natural topography and soils, and the areas will be revegetated with native species.</p> <p>Scientific research will continue to be encouraged, such as research that contributes to the management of rare plant communities and native species. Cooperative basic and applied research will be encouraged through various partnerships and agreements to increase the understanding of Apostle Islands National Lakeshore's resources, natural processes, and human interactions with the environment, or to answer specific management questions.</p> <p>In conjunction with other NPS offices, the NPS staff will continue to expand the data management system, including a geographic information system (GIS) and a research/literature database, for analyzing, modeling, predicting, and testing trends in resource conditions.</p> <p>NPS managers will develop and regularly update a park resource stewardship strategy, and prioritize actions needed to protect, manage, and study the park's resources.</p> <p>Managers will monitor and assess predicted and actual impacts of climate change on the park and develop, where possible, feasible strategies to mitigate impacts.</p> <p>New employees will be educated about the significance of natural resources and major threats to these resources.</p> <p>Interpretive and educational programs will continue to be provided to visitors and residents neighboring the park on the preservation of rare plant communities, migratory bird species, and other native species.</p> <p>NPS staff will continue to detect and investigate illegal activity; apprehend and successfully prosecute violators; and prevent unauthorized and illegal access and operations through resource education, public safety efforts, and deterrence.</p>
<p>Threatened and Endangered Species</p>	<p>Under the Endangered Species Act, the National Park Service is mandated to promote the conservation of all federal threatened and endangered species and their critical habitats within the park boundaries. NPS <i>Management Policies 2006</i> (4.4.2.3) also call for the agency to survey for, protect, and strive to recover all species native to national park system units that are listed under the Endangered Species Act. In addition, the National Park Service is directed to inventory, monitor, and manage state listed species in a manner similar to the treatment of federally listed species, to the greatest extent possible. Apostle Islands National Lakeshore</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Threatened and Endangered Species (continued)</p>	<p>supports one federally endangered wildlife species, nine state listed threatened and endangered wildlife species, and 18 state listed endangered or threatened plant species as of 2008.</p> <p>Desired Conditions: All federal and state listed threatened and endangered species and species proposed for listing and their habitats in Apostle Islands National Lakeshore are protected. All Park Service actions help these species to recover—no actions are taken that detrimentally affect these species or their habitats.</p> <p>Strategies: NPS staff will continue to work with the U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources, U.S. Geological Survey, the Red Cliff and Bad River Bands of the Lake Superior Chippewa, and the Great Lakes Fish and Wildlife Indian Commission to ensure that NPS actions help state and federally listed species to recover. If any state or federally listed or proposed threatened or endangered species (e.g., piping plover) were found in areas that would be affected by construction, visitor use activities, or management actions, NPS staff would first reevaluate the suitability of the site for that use or attempt to avoid, minimize, rectify, reduce, compensate, or otherwise mitigate any potential adverse impacts on state or federally listed species. Should it be determined through informal consultation that an action might adversely affect a federally listed or proposed species, NPS staff would initiate formal consultation under section 7 of the Endangered Species Act.</p> <p>The NPS staff will cooperate with the above agencies in inventorying, monitoring, protecting, and perpetuating the natural distribution and abundance of all state and federally listed species and their essential habitats in Apostle Islands National Lakeshore. These species and their required habitats will be specifically considered in ongoing planning and management activities.</p> <p>NPS staff will continue to detect and investigate illegal activity; apprehend and successfully prosecute violators; and prevent unauthorized and illegal access and operations through resource education, public safety efforts, and deterrence.</p> <p>NPS staff will support the recovery planning process, including participating on recovery teams where appropriate.</p> <p>Active management programs will be undertaken to monitor, restore, and maintain listed species’ habitats, control detrimental nonnative species, control detrimental visitor access, and reestablish extirpated populations as necessary to maintain the species and the habitats upon which they depend.</p> <p>Interpretive and curriculum-based education programs and media will be used to educate visitors and the public about NPS efforts to protect and recover these species.</p>
<p>Geologic Resources</p>	<p>Apostle Islands National Lakeshore’s geologic setting is a fundamental underlying factor for the characteristics of its landscapes. Geology is a major determinant of the chemistry of the water and soil, the type of plants that will grow and thrive, the stability of the hillsides, the availability of fresh water, and the locations of habitats. Geologic resources are important for their role in the ecosystem, their scenic grandeur, and their contribution to visitor enjoyment.</p> <p>The park’s geologic resources include both geologic features and geologic processes. Landscapes, coastal processes, and soils are discussed separately below. Other geologic resources in the park include sea caves and sandstone deposits. NPS <i>Management Policies 2006</i> (4.8) and the “Natural Resource Reference Manual #77” provide general direction on the management of geologic resources in park units.</p> <p>Desired Conditions: The park’s geologic processes are preserved and protected as integral components of the park’s natural systems.</p> <p>Strategies: NPS managers will integrate the management and protection of park geologic resources into park planning and operations.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Geologic Resources (continued)</p>	<p>Geologic resources will be systematically inventoried and monitored.</p> <p>Scientific research and geologic education and interpretation will be encouraged.</p> <p>NPS staff will continue to detect and investigate illegal activity; apprehend and successfully prosecute violators; and prevent unauthorized and illegal access and operations through resource education, public safety efforts, and deterrence.</p>
<p>Coastal Processes and Sandscapes</p>	<p>Coastal processes, including wave action (erosion) and deposition and movement of sediments, have shaped, and continue to shape, the shoreline of the park’s islands and mainland unit. NPS <i>Management Policies 2006</i> (4.8.1) and the “Natural Resource Reference Manual #77” provide general direction on the management of coastal processes in park units.</p> <p>Desired Conditions: The park’s coastal processes are preserved and protected as integral components of the park’s natural systems. Natural shoreline processes, such as erosion, deposition, and shoreline migration, function in as natural a condition as possible. To the extent possible, structures such as docks do not alter the nature or rate of natural shoreline processes.</p> <p>Strategies: NPS staff will continue to be a partner with federal, state, and local agencies and with academic institutions to conduct research on sandscapes and coastal features and processes. NPS managers will work with researchers to study the effects of docks on coastal processes, such as the transport of sand and the accretion/erosion of adjacent shorelines.</p> <p>Where human activities or structures have altered the nature or rate of natural shoreline processes, NPS staff will, in consultation with appropriate state and federal agencies, investigate alternatives for mitigating the effects of such activities or structures and for restoring these processes and/or natural conditions.</p> <p>Any shoreline manipulation measures proposed to protect cultural resources will preserve or restore natural geologic and coastal processes as much as possible.</p> <p>Inventoring and monitoring will continue to ensure that coastal features are not adversely affected by human activities. Effects of recreation on shoreline habitat and shoreline processes will continue to be monitored at sites with known impacts.</p> <p>NPS staff will continue to detect and investigate criminal activity; apprehend and successfully prosecute violators; and prevent unauthorized and illegal access and operations through resource education, public safety efforts, and deterrence.</p> <p>New or replacement developments will not be placed in areas vulnerable to wave erosion or active shoreline processes unless the development is essential to meet the park’s purposes and</p> <ul style="list-style-type: none"> • no practicable alternative locations are available • the development will be reasonably assured of surviving during its planned life span without the need for shoreline control measures • steps will be taken to minimize safety hazards and harm to property and natural and cultural resources <p>Work will continue on restoring the disturbed sandscapes as needed.</p> <p>Interpretive and educational programs will continue to be developed to educate visitors and the public about the nature and importance of coastal features and processes.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Soil Resources</p>	<p>Soils are a critical element that helps determine what vegetation and wildlife occur in Apostle Islands National Lakeshore, and that affect the area’s productivity, drainage patterns, and erosion. Soils also provide structural support to buildings and other developed facilities in the park. NPS <i>Management Policies 2006</i> (4.8.2.4) and the “Natural Resource Reference Manual #77” provide general direction on the management of soils resources in park units.</p> <p>Desired Conditions: The NPS staff understands and protects the soil resources of the park. Soil resources and processes function in as natural a condition as possible. To the extent possible, actions prevent or minimize adverse impacts on soils, including unnatural erosion, physical removal, and contamination of soils.</p> <p>Strategies: Areas with soil resource problems will be identified and management actions taken appropriate to the management zone to prevent or minimize further soil erosion, compaction, or deposition.</p> <p>Actions that have the potential to result in significant soil disturbance will be evaluated to determine if erosion control measures need to be applied. Best management practices will be applied to areas with human-caused erosion problems to stop or minimize erosion, restore soil productivity, and reestablish or sustain a self-perpetuating vegetative cover. Soil excavation, erosion, and off-site soil migration will be minimized during and after any ground-disturbing activity.</p> <p>NPS staff will continue to detect and investigate illegal activity; apprehend and successfully prosecute violators; and prevent unauthorized and illegal access and operations through resource education, public safety efforts, and deterrence.</p>
<p>Air Quality</p>	<p>Apostle Islands National Lakeshore is classified as a Class II area under the Clean Air Act (42 USC 7401 et seq.). This air quality classification is the second most stringent and is designed to protect the majority of the country from air quality degradation. The Clean Air Act gives federal land managers the responsibility for protecting air quality and related values, including visibility, plants, animals, soils, water quality, cultural resources, and public health, from adverse air pollution impacts within parks. As directed under the Clean Air Act, the Environmental Protection Agency (EPA) has established primary National Ambient Air Quality Standards (NAAQS) for six pollutants, called “criteria” pollutants, at levels considered protective of human health. (Both primary and secondary NAAQS are set. The primary standards are intended to protect human health, the secondary standards are intended to protect environmental resources and public welfare. To date, the secondary standards are set at the same level as the primary standards.) While the National Park Service is concerned with monitoring the status and trends of criteria pollutant concentrations in parks, as well as the impacts of these concentrations on air quality and related values, the EPA and state air regulatory agencies have the primary responsibility for ensuring that the standards are maintained to protect human health. Further, it has been documented that adverse impacts to air quality and related values can occur at levels below the NAAQS for criteria pollutants.</p> <p>Although no physical and chemical air quality monitoring has been done recently in the park, information from nearby monitoring networks suggests that air quality generally is thought to be moderate in Apostle Islands, and may be influenced by regional transport from distant pollution sources. For instance, the most recent <i>Air Quality Status and Trends for National Parks Report</i> (2007) noted that both sulfate and ammonium concentrations in precipitation are increasing at nearby Isle Royale National Park. In this status report, the National Park Service rated deposition based on recent conditions at Isle Royale as “moderate” for sulfur deposition and “significant concern” for nitrogen deposition. This same report rated visibility conditions at both Isle Royale and Voyagers national parks as “moderate.” Trend analyses for visibility data from these two parks show no significant trend in either direction for both the best and worst visibility days. Finally, monitoring networks nearby (within 10 miles of Apostle Islands), operated by the state to determine attainment of the national standards for ozone and particulate matter (PM), demonstrate that recent concentrations of these pollutants are below the applicable standards, but are at levels that would be considered “moderate” for air quality and related values protection purposes. Collectively, this information indicates that air</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Air Quality (continued)</p>	<p>quality in this region of the country, including Apostle Islands National Lakeshore, generally could be considered moderate.</p> <p>Desired Conditions: Air quality and air quality indicators in the park are maintained at levels that protect the most sensitive resources. Natural visibility conditions exist in the park, and scenic views of the landscape are protected from visibility degradation for the enjoyment of current and future visitors. The quality of visitor experience and visitor health is protected through attainment of the National Ambient Air Quality Standards.</p> <p>Strategies: NPS staff will continue to work with appropriate federal, state, and tribal government agencies, including the U.S. Environmental Protection Agency, Wisconsin Department of Natural Resources, Bad River Band and Red Cliff Band, and nearby communities, to maintain the park’s air quality. NPS staff will participate in regional air quality planning, research, and the implementation of air quality standards. If possible, air quality in the park will be periodically monitored to gain baseline information and to measure any changes (improvement or deterioration) to the Apostle Islands’ airshed. Native plants or other species that may be sensitive indicators of air pollution will continue to be monitored periodically.</p> <p>To the extent possible emissions associated with park operations and visitor use will be minimized through timing and the use of best management practices and appropriate equipment. Sustainable practices and pollution prevention measures will be used in park operations. The use of clean fuels will be promoted for use by the park, visitors, and communities. Best available practices and technologies will be used to provide healthful indoor air quality.</p> <p>Mitigative measures will be required as part of construction to avoid potential impacts to air quality.</p> <p>To minimize smoke impacts, prescribed burns will occur only when favorable meteorological conditions are present. The vegetation to be burned shall be in a condition that will facilitate combustion and minimize the amount of smoke emitted during combustion. Before conducting prescribed burns, NPS staff will obtain a burning permit from the Wisconsin Department of Natural Resources.</p> <p>NPS staff will encourage and assist in research on air quality to learn about the effects of local and long-range atmospheric deposition on park water quality, plants, soils, and wetlands.</p> <p>NPS staff will continue to educate and promote greater public understanding of the importance of air quality to the park. Information regarding air quality and related values, including threats of air pollution to park resources, will be provided to park visitors and regional residents.</p> <p>NPS staff will review permit applications for new air pollution sources that could affect the park.</p>
<p>Water Quality</p>	<p>Water is a key resource in Apostle Islands National Lakeshore, shaping the landscape and affecting plants, animals, and visitor use. The Clean Water Act strives to restore and maintain the integrity of U.S. waters, which includes waters in the park. <i>NPS Management Policies 2006</i> (4.6.3) and “NPS Natural Resource Management Reference Manual #77” provide direction on the protection and management of water quality in Apostle Islands National Lakeshore. The state of Wisconsin also has designated Lake Superior waters around the islands as outstanding resource waters.</p> <p>Desired Conditions: Apostle Islands National Lakeshore’s water quality reflects natural conditions and supports native plant and animal communities and administrative and recreational uses. All water in the park meets applicable state standards. All human sources of</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Water Quality (continued)</p>	<p>water pollution, both within and outside the park, that are adversely affecting Apostle Islands National Lakeshore are eliminated, mitigated, or minimized.</p> <p>Strategies: Using a standardized suite of parameters, NPS staff will monitor surface water quality on a regular basis throughout Apostle Islands National Lakeshore, including island lagoon sites and mainland bay sites (e.g., Little Sand Bay). Other chemical contaminants, such as pesticides and mercury, will be periodically monitored.</p> <p>NPS staff will work with the U.S. Environmental Protection Agency, Wisconsin Department of Natural Resources, Bad River and Red Cliff Bands of the Lake Superior Chippewa, Great Lakes Indian Fish and Wildlife Commission, U.S. Coast Guard, U.S. Geological Survey, U.S. Fish and Wildlife Service, Northland College, University of Minnesota (Duluth), University of Wisconsin (Stevens Point, Superior, and Madison), the International Joint Commission, and adjacent landowners to identify pollution sources outside the park’s boundaries that are affecting water quality, such as long-range transport of pollutants and wastewater discharges. Locations of stormwater discharges, which contain a number of potentially toxic substances, will be documented on the Bayfield Peninsula.</p> <p>Mitigative measures will be required as part of construction to avoid potential impacts to water quality.</p> <p>NPS managers will continue to educate boaters about current regulations and risks posed by fuel spills, human waste discharge, aquatic invasive species, and discharge of bilge water or bait buckets.</p> <p>NPS staff will continue to detect and investigate illegal activity; apprehend and successfully prosecute violators; and prevent unauthorized and illegal access and operations through resource education, public safety efforts, and deterrence.</p> <p>Best management practices will be applied in the park to stormwater runoff and to all pollution-generating activities and facilities, such as maintenance and storage facilities and parking areas.</p> <p>The use of pesticides and other chemicals will be minimized and managed in conformance with NPS policy and federal regulations.</p> <p>A hazardous substance and spill contingency plan will be kept current on contamination from hazardous materials (e.g., petroleum products, sewage, and agricultural chemicals).</p> <p>NPS staff will continue to educate and promote greater public understanding of the importance of water quality to the park. Information regarding water quality and related values, including threats of water pollution to park resources, will be provided to park visitors and regional residents.</p> <p>NPS staff will review permit applications for major new water pollution sources that could affect the park.</p>
<p>Wetlands</p>	<p>Small wetlands are present on most of the islands and the mainland unit. Wetlands are protected and managed in accordance with Executive Order 11990: “Protection of Wetlands” and NPS Director’s Order 77-1: “Wetland Protection” and its accompanying procedural manual.</p> <p>Desired Conditions: The natural values of wetlands are maintained and protected. If appropriate, wetlands are used for educational, recreational, scientific, and similar purposes provided the uses do not disrupt natural wetland functions.</p> <p>Strategies: If possible, a monitoring program will be developed for wetlands in the park based on wetland inventory information to help ensure proper management and protection of wetland resources. More detailed wetland mapping will be done in areas that are</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Wetlands (continued)</p>	<p>proposed for development or are otherwise susceptible to degradation or loss due to human activities.</p> <p>NPS staff will be trained on identifying wetlands to ensure that operational activities do not inadvertently drain or alter wetlands, including ephemeral (seasonal) wetlands.</p> <p>The construction of new developments in wetlands will be avoided. If it is not possible to avoid locating a new development in a wetland or to avoid a management action that would adversely affect a wetland, the National Park Service will comply with the provisions of Executive Order 11990: "Protection of Wetlands," the Clean Water Act, and Director's Order 77-1. All practicable measures (including the best management practices described in Appendix 2 of the "NPS Procedural Manual #77-1 "Wetland Protection") will be included in the proposed action to minimize harm to wetlands. The loss of any wetlands will be compensated.</p> <p>A statement of findings for wetlands will be prepared, according to the guidelines defined in the NPS Procedural Manual #77-1, if an action would result in an adverse impact on a wetland. The statement of findings would include an analysis of the alternatives, delineation of the wetland, a wetland restoration plan to identify mitigation, and a wetland functional analysis of the impact site and restoration site.</p>
<p>Floodplains</p>	<p>Apostle Islands National Lakeshore has one riverine floodplain on the mainland unit (Sand River). However, shoreline areas on the islands and mainland are also subject to flooding from the lake and should be managed in accordance with NPS <i>Management Policies 2006</i> (4.6.4 and 4.8.1.1) and Director's Order 77-2: "Floodplain Management."</p> <p>Desired Conditions: Natural floodplain values are preserved. Long- and short-term impacts associated with the occupancy and modification of floodplains are avoided. Hazardous conditions associated with flooding that could affect visitor and employee safety are minimized.</p> <p>Strategies: Whenever possible, new developments will be located on sites outside floodplains. If it is not possible to avoid locating a new development on a floodplain or to avoid a management action that would affect a floodplain, the National Park Service will</p> <ul style="list-style-type: none"> • prepare and approve a statement of findings in accordance with Director's Order 77-2 • use nonstructural measures as much as practicable to reduce hazards to human life and property while minimizing impacts on the natural resources of floodplains • ensure that structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR 60) <p>Mitigative measures will be required as part of construction to avoid any potential indirect effects to floodplains. Before initiating any ground-disturbing projects, further investigation will be conducted to determine if floodplain resources would be affected. Floodplains will be addressed at the project level to ensure that projects are consistent with NPS policy and Executive Order 11988: "Floodplain Management." Nonstructural measures will be emphasized as much as practicable to reduce hazards to human life and property while minimizing impacts on the natural resources of floodplains.</p>
<p>Lightscape Management / Night Sky</p>	<p>Section 4.10 of NPS <i>Management Policies 2006</i> recognizes that the night sky of parks plays a role in natural resource processes and the evolution of species, as well as being a feature that contributes to the visitor experience. The policy further states that NPS staff will seek to minimize the intrusion of artificial light into the night scene. In natural areas, artificial outdoor lighting will be limited to meeting basic safety requirements and will be shielded when possible.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Lightscape Management / Night Sky (continued)</p>	<p>Desired Conditions: Opportunities to view the night sky are available. Artificial light sources do not impair night sky viewing opportunities or adversely affect wildlife populations. Intrusion of artificial light from outside the park is minimized when practicable.</p> <p>Strategies: Impacts on the night sky caused by lights within Apostle Islands National Lakeshore will be evaluated. NPS staff will work with park visitors, neighbors, local governments, and tribal governments to find ways to minimize the intrusion of artificial light from outside the park into the night scene in the park.</p> <p>In developed areas, artificial outdoor lighting will be limited to basic safety requirements and will be designed to minimize impacts on the night sky.</p> <p>NPS staff will evaluate the impacts on the night sky caused by park operations. If light sources in the park are affecting night skies, alternatives will be found to existing lighting sources, such as shielding lights, changing lamp types, or eliminating unnecessary sources.</p>
<p>Natural Soundscape</p>	<p>NPS <i>Management Policies 2006</i> (4.9) and Director’s Order 47: “Sound Preservation and Noise Management” require NPS managers to strive to preserve the natural soundscape (natural quiet) associated with the physical and biological resources (for example, the sounds of the wind in the trees). The concept of natural quiet was further defined in the <i>Report on Effects of Aircraft Overflights on the National Park System</i> (NPS 1995):</p> <p><i>What is natural quiet? Parks and wildernesses offer a variety of unique, pristine sounds not found in most urban or suburban environments. They also offer a complete absence of sounds that are found in such environments. Together, these two conditions provide a very special dimension to a park experience—quiet itself. In the absence of any discernible source of sound (especially manmade), quiet is an important element of the feeling of solitude. Quiet also affords visitors an opportunity to hear faint or very distant sounds, such as animal activity and waterfalls. Such an experience provides an important perspective on the vastness of the environment in which the visitor is located, often beyond the visual boundaries determined by trees, terrain, and the like. In considering natural quiet as a resource, the ability to clearly hear the delicate and quieter intermittent sounds of nature, the ability to experience interludes of extreme quiet for their own sake, and the opportunity to do so for extended periods of time is what natural quiet is all about.</i></p> <p>NPS regulations (36 CFR 2.12) further identify audio disturbances that are prohibited in park units. In addition, NPS regulations (36 CFR 3.7) state that when operating a vessel in or upon inland water, the noise level should not exceed 82 decibels measured at a distance of 82 feet from the vessel.</p> <p>Desired Conditions: Natural soundscapes are preserved. Visitors have opportunities in most of Apostle Islands National Lakeshore to hear natural sounds. The sounds of civilization are generally confined to developed areas (and limited to specific hours of the day) and shorelines. Unreasonable noise from motorized equipment, including motor vehicles, considering such factors as the purposes of the park and the impact on other park users, is prohibited. Noise-generating activities that could adversely affect park wildlife populations are also prevented or minimized to the greatest extent possible.</p> <p>Strategies: Baseline data on park soundscapes will be collected to understand characteristics and trends in natural soundscapes.</p> <p>Activities causing excessive or unnecessary unnatural sounds in and adjacent to the park, including low-elevation aircraft overflights and high-speed boat races, will be monitored, and action will be taken to prevent or minimize unnatural sounds that adversely affect park resources or values or visitors’ enjoyment of them. If demand for commercial air tours develops, an air tour management plan will be prepared to address air tours and their effects on the park.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Natural Soundscape (continued)</p>	<p>NPS managers will work with concessioners and boat owners to help minimize the noise impacts of boats on the park.</p> <p>Visitors will be encouraged to avoid unnecessary noise, such as maintaining quiet hours at campsites.</p> <p>Interpretive programs and materials will be provided to help visitors understand the role of natural sounds and the value of natural quiet.</p> <p>NPS managers will minimize noise generated by management activities by strictly regulating NPS administrative use of noise-producing machinery such as motorized equipment. Noise will be a consideration when procuring and using NPS equipment.</p> <p>NPS staff will detect, investigate, and enforce violations relating to unreasonable noise described in 36 CFR 2.10, 2.12, 2.15, 2.34, 2.38, 2.50, 2.51. 3.15, 4.2, and temporary rules 1.5 in the "Superintendent's Compendium," will successfully prosecute violators, and will prevent unauthorized and illegal activities through resource education, public safety efforts, and deterrence.</p>
<p>Cultural Resources</p>	
<p>Archeological Resources</p>	<p>NPS <i>Management Policies 2006</i> (5.3.5.1) calls for the National Park Service to manage archeological resources in situ unless physical disturbance is justified and mitigated by data recovery or other means in concurrence with the state or tribal historic preservation officer. See also 36 CFR 79, "Curation of Federally Owned and Administered Archeological Collection" and the <i>Secretary of the Interior's Standards and Guidelines for Archeological Documentation</i>. Other guidance is found in Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended (16 USC 470); DO/NPS-28: "Cultural Resources Management Guideline"; and <i>Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation</i>.</p> <p>Desired Conditions: Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable. Historic and prehistoric archeological sites are identified and inventoried, and their significance is determined and documented. Information on the condition of archeological sites is kept current. Archeological investigations may also be authorized on a case-by-case basis to support research and cultural resource management objectives.</p> <p>More than 60 archeological sites have been identified in Apostle Islands National Lakeshore, and it is almost certain that there are a substantial number of sites not yet discovered.</p> <p>Strategies: When disturbance or deterioration is unavoidable, the site will be professionally documented and excavated, and the resulting artifacts, materials, and records will be curated and conserved in consultation with the Wisconsin state historic preservation office and affiliated American Indian tribal historic preservation offices. Some archeological sites that can be adequately protected might be interpreted to the visitor.</p> <p>In accordance with Section 110 of the National Historic Preservation Act, archeological surveys will continue to be carried out in a systematic fashion so that as much of the national lakeshore as is reasonably possible is surveyed.</p> <p>Archeological assessments and monitoring will be applied as needed to keep data on site conditions up-to-date.</p> <p>NPS staff will continue to detect and investigate violations of the Archeological Resource Protection Act; successfully prosecute violators; and prevent unauthorized and illegal activities through resource education, public safety efforts, and deterrence.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Historic Structures</p>	<p>The National Historic Preservation Act calls for analyzing the effects of possible federal actions on historic structures on or eligible for the national register and for inventorying and evaluating their significance and condition. NPS <i>Management Policies 2006</i> (5.3.5.4) calls for the treatment of historic structures, including prehistoric ones, to be based on sound preservation practice to enable the long-term preservation of a structure's historic features, materials, and qualities. See "Definitions of Cultural Resource Treatments" following table 5 for more information on treatments; also see the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i>.</p> <p>Apostle Islands National Lakeshore has a wide variety of historic structures, ranging from lighthouse stations to fishermen's cabins. The NPS List of Classified Structures (LCS), which lists all structures within the park that possess historical and/or architectural/engineering significance, included 158 structures as of January 2008. Many of these structures are listed or eligible for listing in the National Register of Historic Places.</p> <p>Desired Conditions: Structures listed or eligible for listing in the National Register of Historic Places, are managed to ensure their long-term preservation and protection of character-defining features. All light towers and other national register-listed or -eligible properties continue to be treated and maintained.</p> <p>Strategies: Appropriate preservation treatments for historic structures will be carried out in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i>. As required, historic structures requiring more intensive rehabilitation or restoration treatments will receive further investigation and documentation (e.g., historic structure reports) to inform management decisions and ensure protection of historic fabric and architecturally significant features. Preservation of historic structures will be emphasized as a critical component of the park's ongoing maintenance and resource protection programs.</p> <p>NPS staff will work with others to maintain historically significant properties to the extent necessary.</p> <p>NPS staff will continue to promote and encourage relevant studies (e.g., historic structure reports, shoreline stabilization analyses) to provide baseline documentation in support of appropriate treatment and management of the light stations.</p> <p>National register nominations and supporting documentation will be prepared for eligible properties in consultation with the state and tribal historic preservation offices and other concerned parties.</p> <p>NPS staff will continue to cooperate and consult with government agencies (e.g., Wisconsin state historic preservation office, tribal historic preservation offices, U.S. Coast Guard, etc.), other interested parties and partners to achieve appropriate treatments and uses for the light stations in efforts to ensure their long-term preservation and continued operation as aids to navigation.</p> <p>NPS cultural resource, natural resource, and fire management specialists will collaborate on strategies to reduce the risk of fire resulting from vegetation encroachment near the light stations and other risk factors.</p> <p>NPS staff and volunteers will continue to interpret the light stations and other selected historic properties to the public, demonstrating the importance of ongoing preservation maintenance and stabilization undertakings along with interpretation of historical and cultural significance.</p> <p>NPS staff will evaluate and implement measures to minimize visitor use impacts to the light stations and associated landscape features and other historic structures.</p> <p>The historic significance of all the life estates and expired use and occupancy properties will</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Historic Structures (continued)</p>	<p>be evaluated before making any decisions on their future.</p> <p>The park staff will, at a minimum, strive to stabilize all the structures in the life estates and expired use and occupancy properties that are listed or eligible for listing in the national register.</p> <p>NPS staff will continue to detect and investigate acts of tampering, vandalism, damage, and violations affecting historic structures; successfully prosecute violators; and prevent unauthorized and illegal activities through resource education, public safety efforts, and deterrence.</p> <p>The National Park Service will seek national historic landmark status for the park’s collection of light stations.</p>
<p>Ethnographic Resources</p>	<p>NPS <i>Management Policies</i> 2006 (5.3.5.3) calls for gathering ethnographic information through anthropological and collaborative community research that recognizes the sensitive nature of such cultural data and documents. Executive Order 13007: “Indian Sacred Sites” also calls for NPS managers to accommodate access to and ceremonial use of American Indian sacred sites by practitioners and to preserve the sites’ physical integrity.</p> <p>Although no systematic survey of ethnographic resources has been conducted in Apostle Islands National Lakeshore, ethnographic resources are no doubt present given the archipelago’s historic central role to the Ojibwe. For example, a wide variety of traditionally used plants are found within the park. Ceremonial sites also may be present.</p> <p>Desired Conditions: All ethnographic resources determined to be of significance to the Red Cliff and Bad River Bands of the Lake Superior Chippewa are protected.</p> <p>NPS staff accommodates access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoids adversely affecting the physical integrity of these sacred sites.</p> <p>NPS general regulations on access to and use of natural and cultural resources in the area are applied in an informed and balanced manner that is consistent with park purposes, does not unreasonably interfere with American Indian use of traditional areas or sacred resources, and does not result in the degradation of area resources.</p> <p>Strategies: In collaboration with the affiliated tribes, NPS managers will continue to identify and evaluate ethnographic resources in the park through research conducted by professional cultural anthropologists and meeting approved NPS standards. As funding and programming priorities allow, research will be directed towards the preparation of reports and studies (e.g., ethnographic overview and assessment, traditional use study, ethnographic landscape study, oral histories) that inform NPS management, planning efforts, and decision making.</p> <p>Identified ethnographic resources of significance to the Red Cliff and Bad River Bands of the Lake Superior Chippewa would be documented and protected.</p> <p>NPS staff will consult with tribal governments of the Red Cliff and Bad River Bands of the Lake Superior Chippewa before taking actions that affect resources of significance to the tribes. The consultations will be open and candid so that all interested parties may evaluate for themselves the potential impact of relevant proposals.</p> <p>American Indian tribes linked by ties of culture to ethnically identifiable human remains, sacred objects, objects of cultural patrimony, and associated funerary objects will be consulted when such items may be disturbed or are encountered on park lands. The tribal and state historic preservation offices will also be consulted.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Ethnographic Resources (continued)</p>	<p>The identities of community consultants and information about sacred and other culturally sensitive places and practices will be kept confidential if disclosure would result in significant invasion of privacy or risk harm to historic resources, or would impede traditional religious use by tribal members.</p> <p>NPS interpretive activities will sensitively incorporate measures to enhance understanding of traditional Ojibwe history and culture.</p> <p>Appropriate cultural anthropological research will be conducted in cooperation with affiliated tribes associated with the park.</p>
<p>Cultural Landscapes</p>	<p>NPS <i>Management Policies 2006</i> (5.3.5.2) calls for the preservation of the physical attributes, biotic systems, and uses of cultural landscapes that contribute to historical significance. Although a cultural landscape inventory has not been completed for Apostle Islands National Lakeshore, the cultural landscapes of the light stations remain remarkably intact.</p> <p>Desired Conditions: Character-defining features and attributes contributing to the national register significance of historic properties as cultural landscapes are appropriately preserved and rehabilitated. Additional inventories of other park areas are carried out to identify cultural landscape resources potentially eligible for the National Register of Historic Places.</p> <p>Strategies: NPS staff will prepare cultural landscape inventories and reports to provide baseline documentation of cultural landscapes in support of appropriate management of the park. National register nominations and supporting documentation will be prepared for eligible landscapes in consultation with the state and tribal historic preservation offices and other concerned parties.</p> <p>Cultural landscape preservation will be emphasized as a critical component of the park’s ongoing maintenance and resource protection programs.</p> <p>Management of cultural landscapes will focus on protecting and preserving a given landscape’s character-defining features and attributes in accordance with recommendations in an up-to-date cultural landscape report. The appropriate preservation treatment of cultural landscapes will be undertaken in accordance with the <i>Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i>.</p>
<p>Museum Collections</p>	<p>NPS <i>Management Policies 2006</i> (5.3.5.5) states that the National Park Service “will collect, protect, preserve, provide access to, and use objects, specimens, and archival and manuscript collections...in the disciplines of archeology, ethnography, history, biology, geology, and paleontology to aid understanding among park visitors, and to advance knowledge in the humanities and sciences.”</p> <p>Desired Conditions: All museum collections and archives and their component artifacts, objects, specimens, documents, photographs, maps, plans, and manuscripts are properly inventoried, accessioned, catalogued, curated, documented, protected, and preserved, and adequate provision is made for their access by NPS staff and other researchers and for their use in exhibits, interpretation, and research.</p> <p>Strategies: Museum objects that are currently on exhibit will remain in the park for the duration of their exhibition. Objects in long-term museum storage may be moved to the planned multipark storage facility at Keweenaw National Historical Park in Calumet, Michigan. A select “core” of historically significant objects and archives (primary source records) may be curated locally if suitable partnership opportunities are identified that meet NPS preservation, protection, and controlled access standards. Apostle Islands’ archeological materials and associated records will continue to be curated at the Midwest Region’s archeological repository, the Midwest Archeological Center in Lincoln, Nebraska.</p>

TOPIC	
Desired Conditions and Strategies for Apostle Islands National Lakeshore	
Wilderness	
Wilderness Management	<p>The Gaylord Nelson Wilderness, established on December 8, 2004, covers some 33,500 acres, or 80% of the land area of the park. The Wilderness Act (16 USC 11131-1136), NPS <i>Management Policies 2006</i> (6), and “NPS Reference Manual 41: Wilderness Preservation and Management” provide direction on management of the area.</p> <p>Desired Conditions: The National Park Service manages the Gaylord Nelson Wilderness for the use and enjoyment of the American people in such a manner that leaves the area unimpaired for future use and enjoyment as wilderness. Wilderness characteristics and values are retained and protected so that visitors continue to find opportunities for solitude and primitive, unconfined recreation, and so that signs of people remain substantially unnoticeable. Natural processes, native species, and the interrelationships among them are protected, maintained, and/or restored to the extent possible, while providing opportunities for their enjoyment as wilderness. Cultural resources such as archeological sites, cultural landscapes, and structures that have been included within wilderness are protected and maintained using methods that are consistent with preservation of wilderness character and values.</p> <p>Present and future visitors enjoy the unique qualities offered in wilderness, including the experiences of solitude, remoteness, risk, challenge, self-sufficiency, discovery, and observation of an untrammelled ecosystem. The values of the Gaylord Nelson Wilderness are understood by the public (through education in wilderness ethics and use) and by park staff (through learning management skills) so that both will promote and preserve these values. Park operations and wilderness functions are coordinated in the park to manage and protect natural and cultural resources in wilderness and preserve wilderness character.</p> <p>Strategies: Activities will be managed to maintain and restore resource conditions, to protect visitor experiences, and to protect and restore wilderness character.</p> <p>Wilderness resources, facilities, and operational activities will be inventoried and monitored. The results of monitoring will be used to refine management programs.</p> <p>A minimum requirement assessment will be used to determine whether or not a proposed management action is appropriate or necessary for administration of the area as wilderness. If the action is deemed appropriate or necessary, the management method selected will be that which causes the least amount of impact to the physical resources and experiential characteristics of the wilderness.</p> <p>Managers considering the use of aircraft or other motorized equipment or mechanical transportation within the wilderness area must consider impacts to the character, aesthetics, and traditions of wilderness before considering the costs and efficiency of the equipment. Administrative use of motorized equipment or mechanical transport will be authorized only if the superintendent determines it is the minimum requirement needed to achieve the purposes of the area as wilderness, or it is needed in an emergency situation involving the health or safety of persons actually within the area.</p> <p>An educational/interpretive program will be developed for visitors, park staff, tribes, park neighbors, and others that enhances the appreciation of wilderness resources, and informs and familiarizes people regarding acceptable and unacceptable uses and activities, wilderness ethics, and how to minimize impacts on wilderness. Leave No Trace practices will be emphasized.</p> <p>NPS staff will not modify the wilderness area to eliminate risks associated with wilderness, but instead will strive to provide users with appropriate information about possible risks.</p> <p>In evaluating environmental impacts, the National Park Service will take into account</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Wilderness Management (continued)</p>	<p>wilderness characteristics and values, including the primeval character and influence of the wilderness; the preservation of natural conditions (including the lack of manmade noise); assurances that there will be outstanding opportunities for solitude; the provision of a primitive and unconfined type of recreational experience; and the preservation and use of wilderness in an unimpaired condition.</p> <p>Public use activities will be monitored, and prompt action will be taken to address known or potential problems. NPS staff will take appropriate action to limit visitor impacts on resources. When resource impacts or demands for use exceed established thresholds or capacities, NPS staff may limit or redirect use.</p> <p>NPS staff will continue to detect and investigate violations relating to wilderness use and access; successfully prosecute violators; and prevent unauthorized and illegal activities through resource education, public safety efforts, and deterrence.</p> <p>NPS managers will continue to provide opportunities to visitors to camp and hike in the wilderness area.</p> <p>No new docks will be built adjacent to the wilderness area, and no group campsites will be constructed within it, because concentrating visitors, and the infrastructure required to prevent resource damage due to large groups, violates the spirit of wilderness designation.</p> <p>NPS staff will continue to maintain existing campsites and trails, although some may be relocated or redesigned for resource protection purposes.</p> <p>Research related to the wilderness ecosystem and key natural resources and visitor experiences will be encouraged when consistent with NPS responsibilities to preserve and manage wilderness.</p>
<p>Visitor Use and Experience</p>	
<p>Visitor Use and Experience</p>	<p>The NPS Organic Act, NPS General Authorities Act, and NPS <i>Management Policies 2006</i> (1.4, 8.1, 8.3.1) all address the importance of park units being available for Americans to enjoy and experience. Current laws, regulations, and policies leave considerable room for judgment about the best mix of types and levels of visitor use activities, programs, and facilities. For this reason, most decisions related to visitor experience and uses are addressed in the alternatives. However, all visitor use of the national park system must be consistent with the above guidelines.</p> <p>Desired Conditions: Visitors have opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in Apostle Islands National Lakeshore. All areas of the park, with the exceptions of areas with life estates and areas that need special resource protection, continue to be open to visitors. High-quality opportunities continue to be provided for visitors to understand, appreciate, and enjoy the park. Visitors have opportunities to understand and appreciate the significance of Apostle Islands National Lakeshore and its resources, and to develop a personal stewardship ethic. To the extent feasible, park programs, services, and facilities are accessible to and usable by all people, including those with disabilities. The types and levels of visitor use in all of Apostle Islands National Lakeshore do not result in unacceptable resource degradation or significant visitor dissatisfaction. No activities occur that would cause derogation of the values and purposes for which the park was established.</p> <p>Strategies: All of Apostle Islands National Lakeshore’s programs and facilities will be evaluated on a regular basis to ensure that they are accessible to the extent feasible.</p> <p>Visitor surveys will be conducted periodically to determine visitor satisfaction with park facilities, NPS management actions, and the experiences they are having.</p> <p>NPS staff will periodically meet with chambers of commerce, tourism agencies, and other land</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Visitor Use and Experience (continued)</p>	<p>managers in the region, such as staff of the Chequamegon–Nicolet National Forest and tribal land managers, to improve visitor trip planning and information and orientation and interpretation and education opportunities for Apostle Islands National Lakeshore visitors.</p> <p>To meet the requirements of the 1978 National Parks and Recreation Act and NPS management policies, NPS staff will continue to monitor visitor comments on issues such as crowding and availability of parking spaces and campsites at busy times of the year, and will monitor for resource impacts caused by visitors. Should any of the trends increase to levels unacceptable to managers, NPS staff will consider what actions to take. (Additional information on user capacity can be found in “The Alternatives” chapter.)</p> <p>If new campsites are built, they will be developed according to design standards that would protect resources and provide a high-quality visitor experience consistent with the Apostle Islands environment.</p>
<p>Visitor Information, Interpretation, and Education</p>	<p>A variety of methods are used to orient visitors to Apostle Islands National Lakeshore, to provide information about the park, and to interpret the park’s resources. Interpretation and education are two key park programs for achieving the park’s purposes and maintaining its significance. NPS <i>Management Policies 2006</i> (chapter 7), and Director’s Order 6: “Interpretation and Education” provide guidance for park interpretive and educational programs.</p> <p>Desired Conditions: Interpretive and educational services/programs at the park facilitate intellectual and emotional connections between visitors and park resources, foster understanding of park resources and resource stewardship, and build a local and national constituency. Outreach programs through schools, organizations, and partnerships build connections to the park. Curriculum and place-based education inspire student understanding and resource stewardship. Visitors receive adequate information to orient themselves to the park and opportunities for a safe and enjoyable visit. Pre-trip information is available for visitors to plan a rewarding trip.</p> <p>Strategies: The park’s comprehensive interpretive plan will be implemented and updated as appropriate, with emphasis on providing information, orientation, and interpretive services in the most effective manner possible.</p> <p>NPS staff will stay informed of changing visitor demographics and preferences to effectively tailor programs for visitors. Interpretive media will be developed to support park purposes, significance, interpretive themes, and fundamental resources and values.</p> <p>NPS staff will continue to promote improved pre-trip planning information and orientation for park visitors through the park’s web site and other media. NPS staff will work with local communities and other entities to provide services outside park boundaries, where appropriate.</p> <p>NPS staff will limit electronic and interactive media use to pre-trip and visitor center use, so that the sights and sounds of park resources remain the primary focus of visitors while actually in the park.</p> <p>NPS staff will cooperate with partners, other governmental agencies, educational institutions, and other organizations to enrich interpretive and educational opportunities locally, regionally, and nationally.</p> <p>The National Park Service will continue its partnership in operating the Northern Great Lakes Visitor Center.</p> <p>Regardless of the future of the existing visitor centers, visitors will still be able to obtain information on the national lakeshore at Little Sand Bay and in Bayfield.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Visitor Information, Interpretation, and Education (continued)</p>	<p>An education strategy plan will be developed and implemented, which outlines goals and actions for providing curriculum and place-based education programs.</p> <p>NPS staff will continue to regularly update plans and prioritize actions needed to serve visitors and provide effective interpretation.</p> <p>Efforts will continue to educate staff, visitors, and the public about park interpretive/education programs.</p> <p>NPS staff will continue to educate, interpret, and inform the public about the significance and uniqueness of park resources; conservation; ecologically sound practices; and the laws, rules, and regulations developed to protect park resources and provide for their safe and nonconsumptive use.</p>
<p>Sport and Commercial Fishing</p>	<p>Under the park’s enabling legislation and NPS <i>Management Policies 2006</i> (8.2.2.5) fishing is allowed in Apostle Islands National Lakeshore. Recreational fishing is a popular activity in the park. Some commercial fishing also occurs within the park boundary. This use is consistent with the park’s legislative history, despite not being specifically mentioned in the enabling legislation.</p> <p>Desired Conditions: High-quality public opportunities continue to be available for fishing in the park provided that harvesting does not unacceptably impact park resources or natural processes.</p> <p>Strategies: NPS staff will continue to work with the Wisconsin Department of Natural Resources, Great Lakes Indian Fish and Wildlife Commission, the Red Cliff and Bad River Bands of the Lake Superior Chippewa in the park, the U.S. Fish and Wildlife Service, and the U.S. Geological Survey Biological Resource Division in monitoring fish populations and enforcing state and tribal regulations to ensure that harvest levels do not adversely affect the park’s fish populations.</p> <p>Populations of nonnative fish will be managed whenever such species threaten park resources or public health and when control is prudent and feasible.</p> <p>Nonnative fish will not be stocked in park waters, and NPS managers will work with other agencies to minimize stocking outside park boundaries that will influence park resources.</p> <p>NPS staff will continue to detect and investigate fishing violations and illegal transportation of fish, fish parts, water, and invasive aquatic species; apprehend and successfully prosecute criminal violators; and prevent unauthorized and illegal activities through resource education, public safety efforts, and deterrence.</p>
<p>Hunting and Trapping</p>	<p>Under the park’s enabling legislation hunting and trapping are permitted in Apostle Islands National Lakeshore provided that harvesting does not unacceptably impact park resources or natural processes. Since 2002, tribal members have exercised their treaty-reserved rights to hunt, trap, and gather on park lands. However, with the exception of deer hunting in a few areas, hunting and trapping activities are fairly uncommon in the park.</p> <p>Desired Conditions: Consistent with the <i>Wildlife Management Plan for Harvestable Species</i>, high-quality opportunities for the public and tribal members continue to be available for hunting and trapping in the park provided that harvesting does not unacceptably impact park resources or natural processes.</p> <p>Strategies: NPS staff will continue to set harvest limits, dates, and seasons for hunting and trapping within the park. NPS staff will work with the Wisconsin Department of Natural Resources, Great Lakes Indian Fish and Wildlife Commission, and the Red Cliff and Bad River Bands of the Lake Superior Chippewa in the park to develop and revise these regulations as needed; to monitor and enforce the regulations to ensure that harvest levels are consistent with the <i>Wildlife Management Plan for Harvestable Species</i>; and to ensure that visitors have a</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Hunting and Trapping (continued)</p>	<p>safe, quality experience.</p> <p>NPS staff may encourage the intensive harvesting of certain species (e.g., deer) in certain situations when needed to meet park management objectives. Habitats will not be manipulated to increase the numbers of a harvested species above their natural population ranges</p> <p>NPS staff will continue to detect and investigate hunting and trapping violations; apprehend and successfully prosecute criminal violators; and prevent unauthorized and illegal activities through resource education, public safety efforts, and deterrence.</p>
<p>Public and Employee Health and Safety</p>	<p>NPS <i>Management Policies 2006</i> places a high value on human safety and injury-free visits. Other federal statutes and regulations that apply to the protection of public health and safety include Director’s Order 50 and RM-50: “Safety and Health”; Director’s Order 58 and RM-58: “Structural Fire Management”; Director’s Order 83 and RM-83: “Public Health”; Director’s Order 51 and RM-51: “Emergency Medical Services”; Director’s Order 30 and RM-30: “Hazard and Solid Waste Management; 29 CFR (OSHA); and Superintendent’s Order 31: “Safety, Environmental Management, and Sustainability.”</p> <p>Desired Conditions: While recognizing that there are limitations on their capability to totally eliminate all hazards, the National Park Service and its partners, contractors, and cooperators work to provide a safe and healthful environment for visitors and employees. The NPS staff strive to identify recognizable threats to safety and health and protect property by applying nationally accepted standards. The park is a safe workplace—no preventable workplace accidents, spills, or lost time injuries occur in the park. Consistent with mandates, the NPS staff reduces or removes known hazards or applies appropriate mitigating measures, such as closures, guarding, gating, and education.</p> <p>Strategies: Superintendent’s Order 31: “Safety, Environmental Management, and Sustainability” will be fully implemented and regularly updated. This order describes the park’s objectives, goals, commitments, and processes for employee safety. See the following web site for more information: http://www.nps.gov/apis/naturescience/upload/Safety_Sustainability_policy.pdf</p> <p>Safety plans will be maintained to address health and safety concerns and identify appropriate levels of action and activities.</p> <p>Interpretive signs and materials will be provided as appropriate to notify visitors of potential safety concerns/hazards and procedures to help provide for a safe visit to the park and to ensure that visitors are aware of the possible risks of certain activities.</p> <p>Park equipment will be maintained in a safe and environmentally sound condition.</p> <p>Routine safety and environmental checks will be conducted of employees, contractors, and business partner operations.</p> <p>NPS staff will continue to work with local emergency and public health officials to make reasonable efforts to search for lost persons and rescue sick, injured, or stranded persons.</p> <p>NPS staff will make reasonable efforts to provide appropriate emergency medical services for a person who becomes ill or is injured.</p>
<p>Other Topics</p>	
<p>Sustainable Design/ Practices</p>	<p>Sustainability can be defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainable practices and principles are those choices, decisions, actions, and ethics that will best achieve ecological/biological integrity; protect qualities and functions of air, water, soil, and other aspects of the natural</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Sustainable Design/ Practices (continued)</p>	<p>environment; and preserve human cultures. Sustainable practices allow for use and enjoyment by the current generation, while ensuring that future generations will have the same opportunities. Sustainable practices consider local and global consequences to minimize the short- and long-term environmental impacts of human actions and developments through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials and techniques.</p> <p>The federal government has been emphasizing the adoption of sustainable practices. In particular, Executive Order 13423 strengthens federal environmental, energy, and transportation management. In addition, NPS <i>Management Policies 2006</i> (1.8, 9.1), Director's Order 13: "Environmental Management Systems," and Superintendent's Order 31: "Safety, Environmental Management, and Sustainability" provide direction regarding sustainability.</p> <p>Desired Conditions: The park is a leader in sustainable practices. All decisions regarding park operations, planning, facilities management, and development in Apostle Islands National Lakeshore, from the initial concept through design and construction, reflect principles of resource conservation. Thus, all park developments and operations are sustainable to the maximum degree possible and practical. New developments and existing facilities are located, built, and modified according to the <i>Guiding Principles of Sustainable Design</i> (NPS 1993) or other similar guidelines. All new facilities are built to qualify for silver LEED (Leadership in Energy and Environmental Design) designation or better. The park's land, water, soil, wildlife, and other natural resources are managed in ways that improve their condition and mimic or restore natural conditions wherever possible. The park has state-of-the-art water systems for conserving water, using energy conservation technologies, and using renewable energy sources whenever possible. Nontoxic, biodegradable, and/or durable materials are used in the park whenever possible. The reduction, use, and recycling of materials is promoted, while materials that are nondurable, environmentally detrimental, or require transportation from great distances are avoided as much as possible. The park's carbon footprint is minimized as much as possible.</p> <p>Strategies: Superintendent's Order 31: "Safety, Environmental Management, and Sustainability" will be fully implemented. This order describes the park's objectives, goals, commitments, and processes for sustainability. See the following web site for more information: http://www.nps.gov/apis/naturescience/upload/Safety_Sustainability_policy.pdf</p> <p>NPS staff will work with experts both in and outside the agency to make the park's facilities and programs sustainable to the maximum degree possible. Partnerships will be sought to implement sustainable practices in the park. NPS staff also will work with stakeholders and business partners to augment NPS environmental leadership and sustainability efforts.</p> <p>NPS managers will perform value analysis to examine the energy, environmental, and economic implications of proposed park developments.</p> <p>NPS staff will support and encourage the service of suppliers, and contractors that follow sustainable practices.</p> <p>Rehabilitation (recycling) of existing buildings and facilities generally will be supported over new construction.</p> <p>Recycling of solid waste generated at the park will be increased as much as possible.</p> <p>Energy use will be substantially reduced, and more energy-efficient practices and renewable energy sources will be promoted wherever possible. Vehicles and boats will be converted to alternative fuels, such as hybrid electric, biodiesel, or propane, and the number or size of vehicles or boats will be reduced if possible.</p> <p>Interpretive programs will address sustainable practices both within and outside the park. Visitors will be educated on the principles of environmental leadership and sustainability through exhibits, media, and printed material.</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Sustainable Design/ Practices (continued)</p>	<p>NPS staff will be educated to have a comprehensive understanding of their relationship to environmental leadership and sustainability.</p> <p>The availability of existing or planned facilities in nearby communities and on adjacent lands, as well as the possibility of joint facilities with other agencies, will be considered when deciding whether to pursue new developments in the park. This will ensure that any additional facilities in the park are necessary, appropriate, and cost-effective.</p> <p>NPS staff will work with local communities to develop comprehensive greening plan(s) where appropriate. By collaborating with local communities, the National Park Service can reduce outside impacts to the park and maximize conservation efforts in the region.</p> <p>NPS managers will measure and track environmental compliance and performance. Audits will ensure environmental compliance, emphasize best management practices, and educate employees at all levels about environmental management responsibilities. Periodic carbon footprint audits will be conducted.</p>
<p>Climate Change</p>	<p>Climate change is occurring and is expected to affect the park’s weather, resources (e.g., shorelines, vegetation, fish and wildlife, historic structures and light stations, submerged cultural resources), facilities (e.g., docks), and visitors (e.g., use seasons, recreational fishing, navigational hazards). These changes will have direct implications on resource management and park operations, and on the way visitors use and experience the park. Although climate change will affect the park during the life of this plan, many of the specific effects, the rate of changes, and the severity of impacts are not known.</p> <p>While there are no laws or policies that provide direct guidance on addressing climate change, there is guidance that indirectly addresses climate change, including the NPS Organic Act, Executive Order 13423 (includes requirements for the reduction of greenhouse gases and other energy and water conservation measures), Executive Order 15314 (sets sustainability goals, requires federal agencies to measure, manage, and reduce greenhouse gases toward agency-defined goals, and increase energy efficiency), Department of the Interior Secretarial Orders 3226 and 3289 (ensure that climate change impacts be taken into account in connection with departmental planning and decision making), and NPS <i>Management Policies 2006</i> (including sections on environmental leadership [1.8], sustainable energy design [9.1.1.6], and energy management [9.1.7]).</p> <p>Desired Conditions: Apostle Islands National Lakeshore is a leader in its efforts to address climate change, reducing its greenhouse gas emissions, and increasing its use of renewable energy and other sustainable practices so it is a carbon neutral park. Education and interpretive efforts help park visitors understand the process of global warming, climate change, the threats to the park and the wider environment, and how they can respond. Park staff promote innovation, best practices, adaptive management, and partnerships to respond to the challenges of climate change and its effects on park resources. Park staff proactively monitor, plan, and adapt to the effects of climate change by using the best information as it becomes available.</p> <p>Strategies: Apostle Islands National Lakeshore will continue as a member of the Climate Friendly Parks program, measuring park-based greenhouse emissions, developing sustainable strategies to mitigate these emissions and adapt to climate change impacts, educating the public about these efforts, and developing future action plans.</p> <p>Scientific studies and inventories will be encouraged to identify and document changes caused by climate change, to predict potential changes, and to assist in identifying potential responses to climate change.</p> <p>Since emissions from all motorized craft contribute to the park’s emissions, options to improve transportation efficiencies will be explored, including NPS and visitor activities on the</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Climate Change (continued)</p>	<p>water and on the mainland. Emissions from visitors flying or driving to get to the park, and from employees commuting to work and traveling for business, all add to the emissions associated with the park. Opportunities for alternative transportation options, as well as effective carbon offset strategies, will be explored.</p> <p>Park education and interpretive efforts will engage park employees, partners, visitors, and the public on climate change, providing the latest park research and monitoring data and trends, informing the public about what responses are being taken at the park, and inspiring visitors to reduce their carbon footprint.</p> <p>NPS staff will work with local, regional, and national agencies, universities, and other partners to conduct scenario planning for climate change, and identify actions that can be taken to respond to these changes.</p> <p>Anticipated climate change impacts, such as decreases in lake levels and changes in vegetation, will be incorporated into future management plans.</p> <p>(See also the strategies identified above under “Sustainable Design/Practices.”)</p>
<p>Transportation to and within the Park</p>	<p>The location, type, and design of multimodal transportation facilities (e.g., roads, bridges, parking areas, docks, sidewalks, pedestrian trails) strongly influence the quality of the visitor experience and the preservation of park resources. These systems also affect, to a great degree, how and where park resources would be affected by visitors. <i>NPS Management Policies 2006</i> (9.2) calls for NPS managers to identify solutions to transportation issues that preserve natural and cultural resources while providing a high-quality visitor experience. Management decisions regarding transportation require a comprehensive alternatives analysis and thorough understanding of their consequences. Traditional practices of building wider roads and larger parking areas to accommodate more motor vehicles are not accepted practice today.</p> <p>Visitors access the mainland unit of Apostle Islands National Lakeshore primarily in private motor vehicles via county and state highways, and the islands via motorboats, sailboats, or kayaks. How people travel to the park and how they travel within the park plays a major role in the protection of park resources, in visitor levels and the visitor experience, and the need for modified or new infrastructure. In this regard, it is critical for the National Park Service to participate as a partner in local, regional, and statewide planning efforts that would affect transportation to and within the park.</p> <p>Some elements of this topic regarding transportation to and on the islands (i.e., new docks, mooring buoys, trails) are addressed within the alternatives.</p> <p>Desired Conditions: Visitors have reasonable access to Apostle Islands National Lakeshore, and there are connections from the park to regional transportation systems as appropriate. Transportation facilities in the park (e.g., roads, parking areas, trails) provide access for the protection, use, and enjoyment of park resources. Transportation facilities preserve the integrity of the surroundings, respect ecological processes, and provide the highest visual quality and a rewarding visitor experience.</p> <p>Strategies: All currently legal forms of transportation in the park will continue under various local, state, and federal rules.</p> <p>NPS staff will participate in transportation studies and planning processes that may result in links to the park or impacts to park resources. NPS managers will work closely with other federal agencies (e.g., U.S. Department of Transportation, the Federal Highway Administration); tribal, state and local governments (e.g., Wisconsin Department of Transportation, Bayfield and Ashland counties); regional planning bodies; citizen groups; and others to enhance partnering and funding opportunities, and to encourage effective regional transportation planning. Working with these agencies and other stakeholders on transportation issues, NPS managers will seek reasonable access to the park, and intermodal</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Transportation to and within the Park (continued)</p>	<p>connections to regional multimodal transportation systems as appropriate.</p> <p>In general, the preferred modes of transportation will be those that contribute to maximum visitor enjoyment of, and minimum adverse impacts to, park resources and values. Before a decision is made to design, construct, expand, or upgrade transportation access to or within the park, nonconstruction alternatives—such as distributing visitors to alternative locations—would be fully explored. If nonconstruction alternatives would not achieve satisfactory results, then a development solution should consider whether the project</p> <ul style="list-style-type: none"> • is appropriate and necessary to meet management needs • is designed with extreme care and sensitivity to the landscape through which it passes • would not cause adverse impacts to natural and cultural resources, and would minimize or mitigate those impacts that cannot be avoided • reduces traffic congestion, noise, air pollution, and adverse effects on park resources and values • would not violate federal, state, or local air pollution control plans or regulations • would not cause use in the area to exceed the area’s user capacity • incorporates the principles of energy conservation and sustainability • is able to demonstrate financial and operational sustainability • incorporates universal design principles to provide for accessibility for all people, including those with disabilities • takes maximum advantage of interpretive opportunities and scenic values • is based on a comprehensive and multidisciplinary approach that is fully consistent with the park’s General Management Plan and “Asset Management Plan” • enhances the visitor experience by offering new or improved interpretive or visitor opportunities, by simplifying travel within the park, or by making it easier or safer to see park features <p>A tour boat operation, run by a concessioner, has been determined to be necessary and appropriate, and will continue to enable visitors to go to selected islands (e.g., Oak, Raspberry, Stockton).</p> <p>The National Park Service will require, through the concessions contract, concessioner(s) to employ energy conservation and sustainable transportation practices.</p> <p>NPS staff will continue to work with the cruise boat/water taxi concession operator, NPS business partners, and marina operators to ensure that opportunities for safe, reasonable access are provided to visitors seeking to reach the islands, consistent with legal mandates, park purposes, desired resource and visitor experience conditions, and contractual obligations.</p> <p>All beaches, including those adjacent to wilderness, will remain open to the beaching of boats, except for temporary closures to protect resources or visitor safety. NPS managers will develop a commercial services plan to identify the most appropriate means of managing commercial transportation and guiding services within the park.</p>
<p>Utilities and Communication Facilities</p>	<p>The Telecommunications Act of 1996 directs all federal agencies to assist in the national goal of achieving a seamless telecommunications system throughout the United States by accommodating requests by telecommunication companies for the use of property, rights-of-way, and easements to the extent allowable under each agency’s mission. The National Park Service is legally obligated to permit telecommunication infrastructure in the park units if such facilities can be structured to avoid interference with park unit purposes.</p> <p>Rights-of-way for utilities to pass over, under, or through NPS property may be issued only</p>

TOPIC	Desired Conditions and Strategies for Apostle Islands National Lakeshore
<p>Utilities and Communication Facilities (continued)</p>	<p>pursuant to specific statutory authority, and generally only if there is no practicable alternative to such use of NPS lands. Statutory authorities in 16 USC 5 and in NPS <i>Management Policies 2006</i> (8.6.4) provide guidance on these rights-of-way.</p> <p>No commercial telecommunication facilities or utilities exist in Apostle Islands National Lakeshore, and none are expected during the life of this plan.</p> <p>Desired Conditions: Park resources or public enjoyment are not denigrated by nonconforming uses. No commercial telecommunication facilities are built in the park, and towers built to facilitate NPS or other agency communication are the bare minimum, unobtrusive, and limited to developed areas of the park. No new nonconforming use or rights-of-way are permitted through the park without specific statutory authority and approval by the director of the National Park Service or his/her representative, and uses are permitted only if there is no practicable alternative to such use of NPS lands.</p> <p>Strategies: If necessary, and there are no other options, new utilities and communications infrastructure will be placed in association with existing structures and along roadways or other established corridors in developed areas. NPS staff will work with service companies, local communities, and the public to locate new telecommunication structures and utility lines outside of the wilderness area and so that there is minimal effect on park resources in nonwilderness areas. For extension into undisturbed areas in nonwilderness areas, routes will be selected that minimize impacts on Apostle Islands National Lakeshore’s natural, cultural, and visual resources.</p> <p>Utility lines will be placed underground to the maximum extent possible.</p> <p>NPS policies will be followed in processing commercial telecommunications applications.</p> <p>NPS managers will develop a superintendent’s order defining criteria for locating communications and utility infrastructure in the park.</p>

SCOPE OF THE GENERAL MANAGEMENT PLAN / WILDERNESS MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT

NPS staff, the general public, and representatives from local, state, and federal agencies, Indian tribes, and various organizations identified a variety of issues and concerns during scoping (early information gathering) for this plan. An issue is defined as an opportunity, conflict, or problem regarding the use or management of public lands. Comments were solicited at public meetings, through planning newsletters, and on the park's web site (see the "Consultation and Coordination" chapter).

Comments received during scoping demonstrated that there is much that the public likes about the park—its management, use, and facilities. The issues and concerns generally involve determining the appropriate visitor uses, types and levels of facilities, services, and activities that would be compatible with desired resource conditions. The alternatives in the *General Management Plan / Wilderness Management Plan* provide strategies for addressing the issues within the context of the park purpose, significance, and special mandates.

PLANNING ISSUES / CONCERNS TO BE ADDRESSED

Seven major issues and concerns are addressed by this plan. The plan also provides some general directions for another issue—climate change. In addressing all of these issues, the planning team also needed to consider another basic underlining issue: How can the National Park Service effectively and efficiently manage the park with limited budgets and rising costs.

Future of the Light Stations

Apostle Island National Lakeshore's six light stations were established between 1856 and 1891 to aid navigation through this portion of Lake Superior. They represent one of the largest and most diverse collections of light stations in the United States and are collectively listed in the National Register of Historic Places. The light stations are the most visible historic resources in the park, and they are viewed by many as icons inextricably linked to the region's cultural history. Cultural landscape features associated with the light stations (e.g., keeper's quarters, outbuildings, walkways, gardens, and historic archeological remains) contribute to the overall understanding and appreciation of light station activities and operations during the latter half of the 19th century and the first half of the 20th century. The light stations continue to function as vital navigational aids, demonstrating their ongoing importance to Great Lakes ship traffic and national commerce.

With the exception of Raspberry Island Light, which was recently restored, structural stabilization and/or rehabilitation work is needed for all the other light stations. The lighthouses are kept "presentable" on the exterior, but the interiors are sorely in need of preservation. Decay in all of them exceeds the park staff's ability to keep up, and historic fabric is slowly deteriorating. A growing number of safety deficiencies (such as deteriorating handrails) also are making it increasingly difficult to provide access into the lighthouses. In addition, natural weathering and erosional processes have resulted in deterioration of the light stations and

associated resources, threatening the long-term structural and historical integrity of these properties. Severe shoreline erosion adjacent to the Raspberry Island and Outer Island light stations necessitated the recent installation of rubble rock revetments to stabilize steep slopes and protect critical historic resources.

Vegetation is encroaching into formerly cleared areas around many of the light stations, contributing to the loss of some of the cultural landscape as well as the buildup of fire fuels. As a result, wildland fire poses an increased risk to the light stations, although fire frequency on the islands is low.

The issue facing the National Park Service is to determine which level of preservation is appropriate for each of the light stations. Preserving, maintaining, interpreting, and studying the light stations requires a substantial allocation of the park's budget. The logistical difficulties of undertaking historic preservation activities within the park add considerably to costs. The park does not have, and is not likely to receive, sufficient funds to do regular maintenance and other preservation treatments on all of the light stations and associated structures. The park also does not have enough staff to interpret and maintain all of the light stations.

Decisions regarding appropriate treatment of the light stations will be documented following completion of detailed historic structure and cultural landscape reports in 2011.

Future of the Life Estates and the Expired Use and Occupancy Properties

The legislation that established Apostle Islands National Lakeshore (PL 91-424) enabled owners with improved properties in the park to continue non-commercial residential use of the properties for a term of up to 25 years or for life (i.e., life estates) if they wanted to continue using the properties following the sale to the federal government. Those who chose to retain the right of use and

occupancy were compensated up front for the fair market value of their properties, minus the value of the reserved interest. All of the fixed term use and occupancy estates have expired.

Three life estates still exist on the southeast tip and west end of Sand Island (covering a total of about 59 acres, including Camp Stella, the Campbell-Jensch cottages, and the West Bay Club); another life estate is on the sandspit on the southeast side of Bear Island (about 10.5 acres); and three other life estates are on the eastern shore of Rocky Island (about 16 acres, including part of the fishing settlement). All properties encumbered by life estates are owned in fee by the United States, subject to the outstanding life estate interest. Owners of life estates are required to maintain the properties.

The structures and landscapes in the park's use and occupancy properties and life estates have been maintained by the lessees to varying degrees. Many of the structures have been well maintained, but some are in poor condition. Some of the structures, such as the West Bay Club and Camp Stella, have been determined eligible for listing in the National Register of Historic Places, although historic structure and cultural landscape reports still need to be completed for most of the properties.

When these remaining properties come under NPS management, park staff will assume responsibility for their maintenance needs. Priorities need to be set regarding the uses and level of preservation for each property, structure, dock, and landscape. As publicly owned components of the park, it is imperative that the public interest be the paramount consideration for these properties.

Appropriate Management of the Nonwilderness Areas on the Islands and Waters within the Park Boundary

This issue focuses on what changes should occur, if any, in the visitor experience opportunities, resource conditions, and

facilities on the islands and portions of the islands that are not designated wilderness. These areas, such as Sand Island and Stockton-Presque Isle, are among the most popular areas in the park. Basswood and Sand islands were not included in the designated wilderness in order for the National Park Service to have flexibility in the future to possibly provide limited developments to address a variety of visitor needs and experiences that wilderness designation would preclude. Long Island also was not included in the designated wilderness.

Several factors affect this issue. The overall number of visitors going to the nonwilderness areas on the islands has remained relatively steady over the past 10 years. Campsites are sometimes full on the weekends during the peak season. Visitors often cannot get the campsites they want when they want them, such as on Sand, York, and Oak islands. Some people would like the National Park Service to provide more visitor facilities and/or opportunities for visitors on the islands, while others believe no changes should occur. Kayak outfitters are interested in additional group campsites, such as on Sand, Oak, and Basswood islands. There are only a few such sites, which limits where large kayak groups can go. Desires have also been expressed for more day use picnic areas, such as on Raspberry, Stockton, and Sand islands.

Some of the park's campsites are showing signs of overuse. The design or condition of some campsites has led to soil compaction and the loss of vegetation.

Some nonwilderness areas have sensitive resources and are vulnerable to damage from visitors, such as on Stockton Island –Presque Isle and Long Island. An extensive network of social trails (i.e., those created by visitors) has formed on the Stockton-Presque Isle tombolo, affecting the fragile dune vegetation that grows there. The Stockton Island – Presque Isle campground also occupies prime black bear habitat. With campsites stretched

out over a long distance, the potential for bear-people conflicts is higher than with nearly any other potential design. Problems with bears can lead to the closure of campsites, docks, and trails, or to the removal of a bear.

Long Island supports important habitat for migratory birds and piping plovers, an endangered species. Due to its proximity to Ashland and Washburn, the island also is a popular day use area for local residents. Because the island has few signs of being part of a national park unit and rarely has NPS staff present, illegal uses have occurred here, such as the use of jet skis in park waters (which are banned in the park) or dogs off leash on the land. The Bad River Band of the Lake Superior Tribe of Chippewa Indians has in the past expressed interest in any issues affecting Long Island.

The logistics of transporting goods and staff via boats to the islands, spread out over some 290,000 acres and with highly changeable weather, makes operation of the park very challenging—and costly. The park staff does not have sufficient funds or enough people to adequately meet all of the needs it faces in the nonwilderness areas, including maintaining current campsites, trails, docks, and other visitor and administrative facilities; providing interpretive and visitor protection services; and inventorying, monitoring, and managing resources. As a result, difficult decisions need to be regularly made on what work gets done and what is put off. Adding new facilities will increase demands and costs for the park staff.

Appropriate Management of the Gaylord Nelson Wilderness

This issue focuses on what changes should occur, if any, in the visitor experience opportunities and visitor facilities and in the natural resource conditions on the islands and portions of the islands that are designated wilderness.

Several factors affect this issue. Although a relatively small percentage (less than 20%) of overall island visitors spend time in the wilderness, that number has been holding steady or increasing in some areas over time. In particular, the number of kayakers, who can land and camp along many of the islands' shorelines, has been increasing.

Some wilderness campsites are showing signs of overuse. Like the nonwilderness campsites, the design or condition of some wilderness campsites has led to resource impacts. In the camping zones that do not have designated campsites, people sometimes repeatedly camp in the same desirable locations near beaches on some islands, resulting in "unofficial" campsites with compacted soils, disturbed vegetation, trash, and human waste.

Some areas in the wilderness have sensitive resources and are vulnerable to damage from visitors, such as sandscapes on Outer and Cat islands.

Another issue related to wilderness is determining when and under what conditions should managers actively intervene in wilderness. As established by the Wilderness Act, the objectives to manage wilderness for ecological conditions (the forces of nature) and for wildness (minimal imprint of man's work) can be in conflict. Notwithstanding the islands' long and continuing history of use by American Indians, including the Gaylord Nelson Wilderness area, the National Park Service must grapple with how to manage those parts of the wilderness where cultural resources are present.

Finally, as in the nonwilderness areas, the logistics of transporting goods and staff via boats to the islands is very challenging and costly.

Appropriate Management of the Mainland Unit

This issue only examines the future of NPS lands on the mainland within the park

boundary—not the mainland visitor centers and administrative facilities.

The mainland portion of Apostle Islands National Lakeshore consists of a 12-mile narrow strip of shoreline, often only 0.25 mile wide, lying between Little Sand Bay and Meyers Beach. Two-thirds of the mainland unit falls within the boundaries of the Red Cliff Indian Reservation. The mainland unit is fragmented by four-wheel drive roads and nonfederal land. The Town of Russell has an 11-acre inholding within the park at Little Sand Bay and maintains a boat launch, campground, small parking area, and baseball field next to the NPS facilities. Development of residences is expected to continue increasing along the boundary of the mainland unit.

Almost all of the use of the mainland unit occurs at its two ends, which are easily accessible by road. On one end the park staff maintains one of the park's major visitor facilities at Little Sand Bay. On the other end, Meyers Beach has recently become a popular day use area in both summer and winter, since it is the primary access point to the mainland sea caves. Together, Little Sand Bay and Meyers Beach account for more than half of the park's total visitation in recent years.

This issue focuses on what visitor experience opportunities should be offered on the mainland unit. What changes should occur, if any, in the current visitor experience opportunities and related visitor facilities? Should the mainland provide its own recreational and educational/interpretive opportunities, distinct from the islands, or should the mainland primarily serve as a portal for visitors going out to the islands?

Future of the Mainland NPS Visitor Centers

Two mainland visitor centers are operated by the National Park Service. The main park visitor center is in Bayfield, while a smaller visitor center is at Little Sand Bay. In addition,

the National Park Service cooperates in the operation of the multiagency Northern Great Lakes Visitor Center near Ashland.

The Bayfield Visitor Center is in the Old Bayfield County Courthouse that is leased from the city of Bayfield. In the 1970s, the city and a group of concerned citizens rallied to restore the courthouse and ensure its long-term preservation. Although the NPS presence in the building has helped in that regard, the building is several blocks from the waterfront where most tourists congregate, and only about 10%–15% of the 150,000 to 200,000 visitors coming to the park actually stop at the visitor center. An even smaller fraction of Bayfield's tourists come to the Bayfield Visitor Center. The space at the Bayfield Visitor Center is cramped for visitor exhibits and the bookstore. The building also has no room for storage, expansion, or sharing space with any partners.

The Little Sand Bay Visitor Center is a seasonal operation at a major visitor site. It is a small facility and does not have adequate space for visitor exhibits. The building has physically deteriorated and cannot be restored in a cost-effective way.

Although not on the mainland, the Stockton Island Visitor Center is commonly unstaffed and also has limited exhibit space. However, this facility meets the current needs of the smaller number of visitors that it serves.

The Northern Great Lakes Visitor Center near Ashland is a relatively new facility with excellent space for exhibits, visitor information services, and education programs. The mission of the visitor center is to help people connect with the historic, cultural, and natural resources of the Northern Great Lakes region. Thus, the center has a much broader focus than just the park. The National Park Service helps fund and staff this visitor center as part of a partnership with the U.S. Forest Service, U.S. Fish and Wildlife Service, and state and local

organizations. NPS funding for that partnership vies with funding for the rest of the park, and therefore is not likely to increase beyond the current level. Although many tourists stop at the visitor center, it is not clear how many park visitors use this facility.

This issue looks at whether or not the existing NPS mainland visitor centers are providing services (e.g., visitor orientation, interpretation, assistance) effectively. Are all of these visitor centers needed? Are they being used by visitors and meeting their needs? Or are there other possibilities for the operation of the mainland visitor centers?

Future of NPS Operational and Administrative Facilities on the Mainland

The National Park Service has administrative and/or operational facilities in the Bayfield Visitor Center (park headquarters), at Little Sand Bay, and at Roys Point. Most of the park administrative offices are in the Bayfield headquarters/visitor center. This historic building is leased from the city. There is no space for growth in staff in the building. Because the headquarters does not include a marina on the waterfront and is across the peninsula from the mainland unit, staff must frequently drive either 3 miles to Roys Point or 13 miles to Little Sand Bay.

The Little Sand Bay administrative and operational facilities consist of seasonal dormitories, docks, fuel facilities, artifact storage space, offices for several rangers, and a fire cache. All of the structures were designed as seasonal facilities and are of marginal quality and construction.

Roys Point has a large warehouse (which also provides offices for rangers and maintenance staff), docks, fuel facilities, workshops, and storage space for boats, vehicles, and equipment. The Roys Point facility is being hemmed in by private residential and marina development on all sides. The Roys Point facilities are leased. Long-term decisions on

the renewal of this lease are contingent, in part, on the direction of this plan.

This issue focuses on whether or not the existing administrative and operational facilities are functioning effectively and efficiently, meeting the needs of both park staff and visitors. With the facilities being in the three locations mentioned above, the park staff is fragmented. The lack of a central facility means that critical tools, equipment, and supplies must be stored in several locations. Staff must travel back and forth between the facilities. Likewise, the ability of the park staff to respond to emergencies (e.g., search and rescue and law enforcement) is not as effective as it could be due to the staff being scattered on the mainland. Roys Point has an advantage of being a good location to access the islands to respond to an emergency; the response time from Bayfield is slightly longer.

Climate Change

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change provide clear evidence that climate change is occurring and will accelerate in the coming decades. While climate change is a global phenomenon, it manifests differently depending on regional and local factors.

Climate change is expected to result in many changes to the Lake Superior region and Apostle Islands National Lakeshore in particular. Some of these changes are already occurring. There are documented increases in air and lake temperature and reductions in ice cover locally, and evidence that spring events are happening earlier regionally. Changes that are expected to occur in the future in the area include hotter, drier summers; warmer winters; less winter ice; warmer water; lower

lake levels; rapidly increasing range of nonnative species like gypsy moths; increases in the frequency, size, and intensity of forest fires; reductions or disappearance of species at the edges of their ranges (which includes almost all of the unique species on the Great Lakes islands), among other changes (Schramm and Loehman 2010).

Climate change will also affect the visitors' park experience in a variety of ways, including

- changes in wildlife activities, such as fishing and bird-watching
- longer summer season
- shorter winter recreation season
- infrastructure problems (e.g., fixed docks may be too high and water may be too shallow to access some docks)
- new navigational hazards (e.g., sand bars)
- increasing frequency and intensity of severe storms, which may lead to more rescues
- longer mosquito and black fly seasons
- changes to recreational fishing opportunities due to fish habitat changes as water warms, the season lengths, and the depth of warm surface waters expands

Climate change may have potential impacts on cultural resources. For example, lower water levels in Lake Superior could result in the exposure of submerged archeological resources near the shorelines of the islands. Exposure of these resources, including historic shipwrecks and currently unidentified prehistoric sites, could place them at increased risk of disturbance from erosion, development, visitor use activities, looting, and other factors. Although historic structures and cultural landscape features are currently at some risk from wildland fires and storm damage, these risks could potentially increase as climate change intensifies the severity of regional fires, and storms.

Climate change is a far-reaching and long-term issue that will affect the park, its resources, visitors, and management, beyond

the scope of this *General Management Plan / Wilderness Management Plan* and its 15- to 20-year timeframe. Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Much depends on the rate at which temperature will continue to rise and whether global emissions of greenhouse gases can be mitigated before serious ecological thresholds are reached.

Climate change science is a rapidly advancing field, and new information is being collected and released continually. Because the drivers of climate change are largely outside the control of park staff, the National Park Service alone does not have the ability to prevent climate change from happening. The full extent of climate change impacts to resources and visitor experience is not known, nor do managers and policy makers yet agree on the most effective response mechanisms for minimizing impacts and adapting to change. Thus, unlike the other issues noted above, this plan does not provide definitive solutions or directions to resolving the issue of controlling impacts of climate change on Apostle Islands National Lakeshore. Rather, the plan provides some general directions and strategies that can help minimize the park's contribution to climate change (see the desired conditions and strategies earlier in this chapter). The plan also recognizes that the management actions and facilities being proposed in all of the alternatives need to be adopted with future climate change and impacts in mind because past conditions are not necessarily useful guides for future planning. In the "Environmental Consequences" chapter of the document, the effects analysis includes climate changes on a broad scale.

PLANNING ISSUES/CONCERNS NOT BEING ADDRESSED

The terms of life estates on use and occupancy properties will not be extended or changed. It was the intent of Congress when the park was

established to fully integrate these properties into the park when the contracts expired.

Under the enabling legislation establishing Apostle Islands National Lakeshore, the park boundary extends 0.25 mile from the shoreline of the mainland unit and around each island. Although many visitors probably consider the waters between the islands to be part of the park, the state of Wisconsin controls the remainder of the archipelago's waters. (The National Park Service has jurisdiction over less than 15% of the waters.) The state has designated the waters in the lakeshore boundary as Outstanding Resource Waters; currently there is not a proposal for the water between the islands to carry the same designation. In a related but separate issue, the multiple jurisdictions evident in the Apostle Islands archipelago makes it challenging for visitors and managers to ascertain what is in and outside the park. A boundary change incorporating more of the waters of the archipelago would enable the National Park Service to enforce one consistent set of rules and activities for more of the Lake Superior water resources between the islands. As a part of the planning process, the planning team assessed the park boundary and determined the boundary was adequate to protect resources and provide for visitor use and park operations at this time. The separate issue of jurisdiction did not, at this time, rise to a need requiring a formal boundary change. Should conditions change, these issues may be reevaluated as necessary.

IDENTIFICATION OF IMPACT TOPICS

An important part of planning is seeking to understand the consequences of making one decision over another. To this end, general management plans are typically accompanied by an environmental impact statement. Environmental impact statements identify the anticipated impacts of possible actions on resources and on park visitors and neighbors. Impacts are organized by topic, such as "impacts on the visitor experience" or

“impacts on vegetation.” Impact topics serve to focus the environmental analysis and to ensure the relevance of impact evaluation. Impact topics identified for the park’s *General Management Plan / Wilderness Management Plan / Environmental Impact Statement* were identified based on federal laws and other legal requirements, Council on Environmental Quality (CEQ) guidelines, NPS management policies, staff subject-matter expertise, and issues and concerns expressed by the public and other agencies early in the planning process (see previous section). The planning team selected the impact topics for analysis based on the potential for each topic to be affected by the alternatives. Also included is a discussion of some impact topics that are commonly addressed in general management plans, but that are dismissed in this plan for the reasons given.

The “Environmental Consequences” chapter contains a more detailed description of each impact topic to be affected by the actions described in the alternatives.

Impact Topics Retained and Dismissed

Impact topics are retained if there could be appreciable impacts from the actions of the alternatives considered. Impact topics are dismissed if they are commonly considered during the planning process, but may not be relevant to the development of the management plan because either (a) implementing the alternatives would have no effect, negligible effect, or minor effect on the topic, or (b) the resource does not occur in the park. Table 2 identifies all of the impact topics considered for this *General Management Plan / Wilderness Management Plan / Environmental Impact Statement* and states whether they were retained or dismissed. The table is organized by theme (e.g., natural resources, cultural resources, visitor use and experience, socioeconomic environment, public health and safety, and park operations) and includes a brief rationale as to why the impact topic was retained or dismissed

Table 2: Impact Topics Retained and Dismissed for Apostle Islands National Lakeshore

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Natural Resource Impact Topics			
Soils	Retained	The Organic Act and NPS <i>Management Policies 2006</i> both require the National Park Service to protect and conserve geologic resources, including soils that could be affected by visitors and managers. Apostle Islands National Lakeshore’s soils are a key resource; the soils help determine where native vegetative communities occur in the park, and they affect the area’s productivity, drainage patterns, and erosion. Soils also provide structural support to buildings and other facilities in the park. Soils generally take thousands of years to develop. Proposed developments in the alternatives would affect the park’s soils. Any impacts that would adversely affect these resources would be of concern to NPS managers and the public.	NPS Organic Act; <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Geologic and Coastal Processes	Retained	Geologic and coastal processes have largely shaped the park over time, and continue to shape the park's coastal features, including its cliffs and sandscapes. NPS docks and other developments may affect local coastal processes, and can affect fish and wildlife, vegetation, and visitors, including recreational activities. Such changes would be of concern to visitors, the public, and park managers.	NPS Organic Act; NPS <i>Management Policies 2006</i>
Water Quality	Retained	Lake Superior's clean waters are one of the park's fundamental resources. The lake's clean water supports the park's natural ecosystems and is important for recreational activities, including fishing, boating, swimming, wading, and kayaking.	Clean Water Act; Executive Order 12088: "Federal Compliance with Pollution Control Standards"; NPS <i>Management Policies 2006</i>
Wetlands	Retained	Wetlands are protected and managed in accordance with Executive Order 11990 and NPS Director's Order 77-1 and its accompanying handbook. This guidance requires the National Park Service to protect and enhance natural wetland values, and requires the examination of impacts on wetlands. The alternatives being considered could affect some wetlands on the mainland.	Clean Water Act; NPS <i>Management Policies 2006</i> ; Executive Order 11990: "Protection of Wetlands"; Director's Order 77-1: "Wetland Protection"
Floodplain Values and Flooding	Retained	The alternatives in this plan propose actions that may affect the management and use of the mainland's floodplains and areas that may be flooded by Lake Superior. Executive Order 11988 and Director's Order 77-2 require the examination of the impacts on floodplains. The alternatives being considered could affect the Sand River floodplain on the mainland.	Director's Order 77-2: "Floodplain Management"; Executive Order 11988: "Floodplain Management"; NPS <i>Management Policies 2006</i>
Terrestrial Vegetation	Retained	One of the primary natural resources of the park is its vegetative communities. The Organic Act and NPS <i>Management Policies 2006</i> both require the National Park Service to protect and conserve native plants and vegetative communities that could be affected by visitors, management actions, and external sources. Actions in the alternatives could beneficially or adversely affect these resources, which would be of concern to many people as well as park managers. The spread of nonnative species also is a major concern in the park.	NPS Organic Act; NPS <i>Management Policies 2006</i>
Terrestrial Wildlife	Retained	The park's wildlife populations are an important park resource and one of the attractions that add to the quality of the visitor experience in the park. As with the above resources, the Organic Act and NPS <i>Management Policies 2006</i> both require the National Park Service to protect and conserve native wildlife populations that could be affected by visitors, management actions, and external sources. Changes in wildlife habitat or in wildlife populations due to	NPS Organic Act; enabling legislation; NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Terrestrial Wildlife (continued)		the alternatives would be of concern to visitors, the public, and park managers.	
Selected Federal and State Threatened and Endangered Species (piping plover and gray wolf)	Retained	The Endangered Species Act of 1973, as amended, requires an examination of impacts on all federally listed threatened or endangered plant and animal species. <i>NPS Management Policies 2006</i> repeat this requirement and add the further stipulation that the analysis examine impacts on state listed endangered, threatened, or rare species, and federal species proposed for listing. Apostle Islands National Lakeshore supports one federally and state listed endangered species, piping plover (<i>Charadrius melodus</i>), and one federally listed endangered species, gray wolf (<i>Canis lupus</i>) that could be affected by the general management plan alternatives.	Endangered Species Act; <i>NPS Management Policies 2006</i>
Soundscape	Retained	<i>NPS Management Policies 2006</i> and Director's Order 47: "Soundscape Preservation and Noise Management" recognize that natural soundscapes are a park resource and call for the National Park Service to preserve, to the greatest extent possible, the natural soundscapes of parks. The policies and director's order further state that the National Park Service will restore degraded soundscapes to the natural condition whenever possible, and will protect natural soundscapes from degradation due to noise (undesirable human-caused sound). The Apostle Islands' natural soundscape (sometimes called "natural quiet") is one of the resources that makes this park a special place. Noise can adversely affect the natural soundscape and other park resources. It can also adversely impact the visitor experience. Presently, park visitors have the opportunity to experience solitude and quiet in an environment of natural sounds. Actions in the alternatives that could potentially increase noise levels in parts of the park would be of concern to some visitors, the public, and park managers.	<i>NPS Management Policies 2006</i> ; Director's Order 47: "Soundscape Preservation and Noise Management"
Air Quality	Dismissed	Apostle Islands National Lakeshore is a Class II air quality area. Air quality impacts have occurred in the park due primarily to external sources. Nothing being proposed in the alternatives for this plan would noticeably affect the park's air quality—all of the actions proposed in the alternatives would have a negligible impact on the airshed. In all of the alternatives the National Park Service would continue to protect and conserve air quality as required under the NPS Organic Act and <i>NPS Management Policies 2006</i> .	Clean Air Act; <i>NPS Management Policies 2006</i>
Prime and Unique Farmlands	Dismissed	Prime farmlands are defined as lands that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are also available for	Council on Environmental Quality 1980 memorandum; Farmland Protection

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Prime and Unique Farmlands (continued)		<p>these uses. Prime farmlands have the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. Unique farmlands are lands other than prime farmland that are used for the production of specific high value food and fiber crops.</p> <p>Three soil map units that occur in the park are prime farmlands, and two map units are prime farmland if drained. Most of the prime farmlands are on Outer and South Twin islands. No unique farmlands are located in the park. Lands in the park are not now in agricultural production. None of the alternatives being considered would adversely affect these soils. No new developments would be proposed in these areas. Thus, there is no need to evaluate the impacts of the alternatives on this topic, because there would be no impacts from the alternatives.</p>	Policy Act
Paleontological Resources	Dismissed	The park is not known to contain scientifically important paleontological resources. Thus, this impact topic was dismissed.	NPS Organic Act; NPS <i>Management Policies 2006</i>
Water Quantity (including groundwater)	Dismissed	None of the alternatives being considered would be expected to substantially change either surface or groundwater flows in the park, or affect the park's water supply. Visitor use levels would increase under some of the alternatives, but water consumption would not be expected to increase to the point where there would be a noticeable impact on surface or groundwater flows. Therefore, any impacts would be negligible.	Clean Water Act; Executive Order 12088: "Federal Compliance with Pollution Control Standards"; NPS <i>Management Policies 2006</i>
Fish	Dismissed	An abundance of different species of fish use the park's waters. Many of the park's fish are sought by sport anglers and commercial fishermen. None of the actions proposed in the alternatives would adversely affect fish populations found in the park, including impacts to water quality that would be large enough to adversely affect fish populations. Increased sportfishing may occur with slightly increased recreational use in some areas under the alternatives, but it is expected that NPS monitoring and the Wisconsin Department of Natural Resources' regulation of the fisheries would prevent adverse impacts to the park's fish populations.	NPS Organic Act; NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Invasive Aquatic Species	Dismissed	<p>Six invasive aquatic species are currently known to be in park waters or in the vicinity of the park: sea lamprey (<i>Petromyzon marinus</i>), Eurasian ruffe (<i>Gymnocephalus cernus</i>), threespine stickleback (<i>Gasterosteus aculeatus</i>), spiny water flea (<i>Bythotrephes longimanus</i>), Eurasian watermilfoil (<i>Myriophyllum spicatum</i>), and purple loosestrife (<i>Lythrum salicaria</i>) (NPS 2007a). Numerous other aquatic invasive species may be encroaching on the park's waters, including viral hemorrhagic septicemia (VHS) (NPS 2008a).</p> <p>These species have the potential to threaten the diversity or abundance of native species, affect ecological health and stability of biological communities, or impair the water for some human use. However, none of the alternatives being considered would affect the introduction or spread of these species, and there would be no impact. Regardless of the <i>General Management Plan / Wilderness Management Plan</i>, it is expected that these species will spread in park waters, and actions will be taken by the National Park Service, in cooperation with the state of Wisconsin and the tribes, to educate the public about the species, monitor park waters, check boats and trailers for the species, and control the invasive species when feasible and appropriate.</p>	National Invasive Species Act; Lacey Act (as amended); Plant Protection Act; NPS <i>Management Policies 2006</i> ; Executive Order 13112: "Invasive Species"
Federal and State Threatened and Endangered Species (other than piping plover and gray wolf)	Dismissed	<p>This document does not analyze in site-specific detail the environmental effects that the alternatives might have on several federal and state listed threatened and endangered species, including lynx and peregrine falcon. Although the park falls within the potential southern range of the federally threatened lynx (<i>Lynx Canadensis</i>), no verified sightings have ever been recorded in the park. There is only a limited amount of boreal forest habitat for this species in the park. Although the federally threatened Fassett's locoweed (<i>Oxytropis campestris</i> var. <i>chartacea</i>) occurs in Bayfield County, it has not been reported in the park.</p> <p>The state endangered peregrine falcon (<i>Falco peregrinus</i>) uses the park during spring and fall migrations, with the Outer Island sand spit being particularly important. However, no actions would be taken under the alternatives to affect the migratory habitat of the peregrine in the park.</p> <p>Several other state listed species may migrate through the park, including the threatened red-shouldered hawk (<i>Buteo lineatus</i>) and Henslow's sparrow (<i>Ammodramus henslowii</i>), and the endangered loggerhead shrike (<i>Lanius ludovicianus</i>),</p>	NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Federal and State Threatened and Endangered Species, other than piping plover and gray wolf (continued))</p>		<p>Caspian tern (<i>Hydroprogne caspia</i>), Forster’s tern (<i>Sterna forsteri</i>), common tern (<i>Sterna hirundo</i>), and red-necked grebe (<i>Podiceps grisegena</i>). However, all of these species are very rarely seen in the park, and none are known to nest in the park. No actions would be taken under the alternatives that would affect the migratory habitat of these species in the park.</p> <p>Five plant species listed by the state of Wisconsin as endangered and 13 listed as threatened also are known to occur in the park. These species would not be affected by the alternatives and thus are not analyzed in detail. Lake cress (<i>Armoracia lacustris</i>) is a submerged aquatic found in estuaries and quiet waters of streams and lakes. The species is probably extirpated from the park. No actions are being taken in the alternatives that would affect the habitat where this species might occur.</p> <p>Shore sedge (<i>Carex lenticularis</i>) and spike trisetum (<i>Trisetum spicatum</i>) are two state-threatened species that occur in several locations in the park, but none of the proposed actions in the alternatives would affect the populations. There is no indication that these species’ populations are being adversely affected by NPS or visitor activities. The two species both occur on Presque Isle, but not in the expected area that would be affected if the Stockton Island – Presque Isle campground were moved to Presque Isle.</p> <p>A population of mountain cranberry (<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>), a state endangered species, occurs along the edge of the Lakeshore Trail on sandstone cliffs. However, there is no evidence to indicate the trail has adversely affected the population, and no actions are being taken in the alternatives that would change the trail or its use in the vicinity of the plant.</p> <p>Several other state listed plant species occur in island forests, wetlands, ravines, bluffs, and cliffs. No new actions would be taken in the alternatives that might affect these species, or where visitors would be likely to affect them, including the endangered moonwort grape-fern (<i>Botrychium lunaria</i>), common butterwort (<i>Pinguicula vulgaris</i>), satiny willow (<i>Salix pellita</i>), and the threatened fairy slipper (<i>Calypso bulbosa</i>, probably extirpated from the park), beautiful sedge (<i>Carex concinna</i>), coast sedge (<i>Carex exilis</i>), Michaux’s sedge (<i>Carex michauxiana</i>), drooping sedge (<i>Carex prasina</i>), broad-lipped twayblade (<i>Listera convallarioides</i>), marsh grass-of-parnassas (<i>Parnassia palustris</i>), plains ragwort (<i>Senecio</i></p>	

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Federal and State Threatened and Endangered Species, other than piping plover and gray wolf (continued)		<p><i>Indecorus</i>), and English sundew (<i>Drosera anglica</i>). Northern gooseberry (<i>Ribes oxycanthoides</i>) and flat-leaved willow (<i>Salix planifolia</i>) are also in areas where no new developments would occur and people would generally not tend to visit.</p> <p>To ensure that disturbance to all the above species is minimized, site-specific surveys would be conducted before any ground disturbance took place.</p>	
Lightscape Management	Dismissed	<p>NPS <i>Management Policies 2006</i> state that the National Park Service will preserve, to the greatest extent possible, the natural lightscapes of parks, including natural darkness. The agency strives to minimize the intrusion of artificial light into the night scene by limiting the use of artificial outdoor lighting to basic safety requirements, shielding necessary lights when possible, and using minimal impact lighting techniques. The actions proposed in the alternatives could result in new facilities on the mainland and a few of the islands, some of which could necessitate some nighttime lighting. However, the effects of this lighting would be localized and minimized by the mitigative techniques described above. Only a small area would be affected by the facilities. In addition, future expansion of lighting is strongly limited by the lack of power at most locations. It is expected that these few developments would have a negligible impact on the night sky.</p>	NPS <i>Management Policies 2006</i>
Cultural Resource Impact Topics			
Archeological Resources	Retained	<p>Ground disturbance associated with proposed development actions (i.e., new trails or other facilities) have the potential to disturb currently unidentified archeological resources.</p> <p>Submerged archeological resources, such as shipwrecks, could also be affected by future actions.</p> <p>If impacts on archeological resources were to occur, they could be of concern to American Indians, visitors, the state and tribal historic preservation offices, and park managers.</p>	<p>Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended (16 USC 470); Advisory Council on Historic Preservation's implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); DO/NPS-28 "Cultural Resources Management Guideline"; <i>Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation</i>; NPS <i>Management Policies 2006</i>; National Environmental Policy Act; Director's Order 28A: "Archeology" (2004)</p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Historic Structures and Buildings	Retained	Apostle Islands National Lakeshore contains many historic structures, such as the light stations and the Hokenson fishery. The alternatives could affect some of these historic structures. The future of the light stations, in particular, is a key issue for this plan. Any changes to these structures could be of concern to visitors, the state historic preservation officer, and NPS managers.	Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended (16 USC 470); Advisory Council on Historic Preservation's implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); DO/NPS-28: "Cultural Resources Management Guideline"; NPS <i>Management Policies 2006</i> ; <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i> ; the National Environmental Policy Act.
Cultural Landscapes	Retained	<p>The park contains rural historic landscapes, which are landscapes that evolved through use by the people whose activities and occupancy shaped that landscape. These landscapes reflect the land use patterns and cultural traditions of the historic island occupants. Cultural landscapes in the national lakeshore include the light stations, farmsteads, fish camps, and logging camps. Ethnographic landscapes may also be identified.</p> <p>The future of the light stations and their cultural landscapes is a key issue for this plan. Changes to the cultural landscapes that could result from implementing one or more of the alternatives would be of concern to visitors, the public, the tribes, the state historic preservation officer, and NPS managers.</p>	Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended (16 USC 470); Advisory Council on Historic Preservation's implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i> (1996); NPS <i>Management Policies 2006</i> ; DO/NPS-28: "Cultural Resources Management Guideline"; National Environmental Policy Act
Ethnographic Resources	Retained	Ethnographic resources are defined by the National Park Service as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system or group traditionally associated with it" (DO/NPS-28: "Cultural Resources Management Guideline").	Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended (16 USC 470); Advisory Council on Historic Preservation's implementing

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Ethnographic Resources (continued)</p>		<p>Although limited studies and research have been completed to identify ethnographic resources within the park, the islands figure prominently in the cultural history of the Lake Superior Ojibwe and other tribes. Historically, Ojibwe bands frequented the islands on a primarily seasonal basis to hunt, fish, and collect berries, medicinal plants, and other resources. These resources have ethnographic importance for tribal members, and by treaty the Ojibwe retain customary rights to hunt, fish, and gather within the park.</p> <p>The National Park Service has consulted with affiliated tribes for this plan, and will continue to consult in the future to identify and suitably protect ethnographic resources. Copies of this <i>General Management Plan / Wilderness Management Plan / Environmental Impact Statement</i> will be forwarded to each affiliated tribe for review and comment. Should consultation result in the identification of ethnographic resources and sites (including sites having sacred or spiritual importance for tribal members), the Park Service will further consult to avoid or mitigate adverse impacts. The Park Service will also accommodate, to the extent practicable, access to and ceremonial use of sacred sites by American Indian religious practitioners. The location of ethnographic sites would not be made public. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction and are determined to be of American Indian origin, guidance for implementing the Native American Graves Protection and Repatriation Act of 1990 would be followed.</p> <p>Because the plan alternatives have the potential to affect or inadvertently disturb ethnographic resources, this impact topic was retained for analysis.</p>	<p>regulations regarding the "Protection of Historic Properties" (36 CFR 800); Native American Graves Protection and Repatriation Act of 1990; National Environmental Policy Act; DO/NPS-28: "Cultural Resources Management Guideline"; NPS <i>Management Policies 2006</i>; Executive Order 13007: "Indian Sacred Sites"(1996)</p>
<p>Museum Collections</p>	<p>Dismissed</p>	<p>Although planning details and time frames are presently indefinite, the National Park Service intends to move museum objects currently stored in inadequate park storage facilities to a new location that meets NPS standards. These objects may be stored at a new multi-park museum storage facility planned for Keweenaw National Historical Park in Calumet, Michigan. A select "core" of historically significant objects and archives (primary source records) may be curated locally if suitable partnership opportunities are identified that meet NPS preservation, protection and controlled access standards. In either case, museum objects on exhibit will remain at the park. The Apostle Islands National Park superintendent will retain ultimate responsibility for the park's collections.</p>	<p>National Historic Preservation Act; American Indian Religious Freedom Act; Archeological and Historic Preservation Act; Archeological Resources Protection Act; Native American Graves Protection and Repatriation Act; NPS <i>Management Policies 2006</i>, Department of the Interior Manual on Museum Property Management 411 DM; <i>NPS Museum</i></p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Museum Collections (continued)</p>		<p>The existing collections and new additions will be managed in conformance with all applicable NPS standards and guidelines and will be accessible for professional study. The alternatives in this general management plan would have only negligible or minor impacts on museum collections. Because more detailed future planning would be carried out as necessary prior to moving objects in storage to new facilities, the topic of museum collections has been dismissed from further analysis in the general management plan.</p>	<p><i>Handbook</i>; Director's Order 24: "Museum Collections Management" and Director's Order 28: "Cultural Resources Management"; 36 CFR 79 "Curation of Federally-Owned and Administered Archaeological Collections"; the National Environmental Policy Act</p>
<p>Indian Trust Resources</p>	<p>Dismissed</p>	<p>The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by U.S. Department of the Interior agencies be explicitly addressed in environmental documents.</p> <p>There are no Indian trust resources in Apostle Islands National Lakeshore. The lands comprising the park, including lands on the mainland that are part of the Red Cliff Indian Reservation (and possibly Long Island in relation to the Bad River Indian Reservation), are not held in trust by the secretary of the interior for the benefit of Indians due to their status as Indians. Although not trust resources, tribes do have specific off-reservation treaty-related rights. Under the Treaty of 1842, Lake Superior Chippewa reserved off-reservation treaty rights to the lands and waters of Lake Superior that now fall within the park. None of the actions proposed by this <i>General Management Plan / Wilderness Management Plan</i>, and none of the actions that might be implemented as a result of the plan, would change any existing conditions or practices concerning American Indian treaty or statutory rights or cultural interests that the tribes traditionally associated with the park maintain in relation to the park. Therefore, this topic was dismissed from further consideration.</p>	<p>Secretarial Order 3175</p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Wilderness Resources and Values Topic			
Wilderness Resources and Values	Retained	Wilderness was recently designated in the park. The park's wilderness resources are important to consider in managing the park. Any changes in opportunities for solitude, the apparent naturalness of the park, and opportunities for primitive, unconfined recreation would be of concern to some visitors, managers, and the public.	The Wilderness Act; Director's Order 41: "Wilderness Preservation"; NPS <i>Management Policies 2006</i>
Visitor Use and Experience Impact Topics			
Ability to Access the Park, Including Universal Access	Retained	Due to the difficulty and cost in reaching the islands, access to the islands is an important issue for visitors. During scoping for this plan, as well as the previous wilderness study, many visitors noted the need for improved access to certain islands (e.g., docks are not deep enough, docks are crowded at times, more docks/boat landings are needed to access certain areas). Other visitors would be concerned, however, if large numbers of visitors started going to the islands due to improved access opportunities. Accessibility of facilities and programs is another issue that could affect visitor use. Any changes in the ability to access the park would be of concern to visitors, the public, and park managers.	NPS Organic Act; Architectural Barriers Act of 1973; Architectural Barriers Act Accessibility Standards (2006); NPS <i>Management Policies 2006</i> ; Director's Order 42: "Accessibility for Visitors with Disabilities in NPS Programs, Facilities, and Services"
Lake and Island Related Recreational Opportunities and Experiences	Retained	Apostle Islands National Lakeshore provides a wide range of lake and island based recreation opportunities and experiences to choose from. During scoping and recent visitor surveys, most respondents acknowledged their enjoyment of the park's recreational opportunities and suggested that the amount of opportunities should be maintained close to current levels. Because the alternatives would result in various changes in these opportunities, such as adding, removing, or improving facilities like trails or campsites, this impact topic would be of concern to visitors, park managers, and the public.	NPS Organic Act; NPS <i>Management Policies 2006</i>
Mainland Recreational Opportunities and Experiences	Retained	With the exceptions of Little Sand Bay and Meyers Beach, there are relatively few recreational opportunities provided on the mainland unit compared to the islands. During scoping for the plan, some people mentioned wanting additional recreation opportunities specifically for the mainland unit. The alternatives being considered would affect mainland recreational opportunities, and thus would be of concern to visitors, the public, and park managers.	NPS Organic Act; NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Opportunities to Understand the Significant Stories of the Apostle Islands	Retained	Apostle Islands National Lakeshore has many stories, covering a wide range of topics. Many visitors seek out and enjoy opportunities to hear these stories. In this regard the NPS staff provide a number of interpretive facilities and programs for visitors. Alternatives in the plan could have an impact on overall visitor understanding, including interpretive and educational opportunities. Any changes in interpretive and educational opportunities would be of concern to visitors, local residents, and park managers.	NPS Organic Act; NPS <i>Management Policies 2006</i>
Visitor Safety	Retained	Because the park presents many potential hazards and risks to visitors and employees, safety is an important concern. The alternatives being considered would address several health and safety concerns, and thus is considered in the analysis of impacts.	CEQ regulations; <i>DO-12 Handbook</i> , NPS <i>Management Policies 2006</i> ; Director's Order 50C: "Public Risk Management Program"
Visitor Transportation to the Park	Dismissed	Visitor transportation to the park addresses how visitors reach the park via local and regional transportation on the mainland (e.g., motor vehicles). No actions are being proposed in the alternatives that would affect how visitors get to the park (excluding access to the islands). Therefore, visitor access and transportation was dismissed as an impact topic.	NPS <i>Management Policies 2006</i>
Socioeconomic Impact Topics			
Socioeconomics	Retained	Apostle Islands National Lakeshore affects local businesses and the economy of Bayfield and other communities in the area. Recreation-related tourism is an important element of the regional economy. Any actions in the alternatives that would alter visitor use levels or visitor use patterns would be of concern to many local businesses, including guides, outfitters, and concessioners (which could affect jobs and/or income), as well as local residents, the general public, and NPS managers. Likewise, changes in NPS expenditures in management of the park due to the alternatives would be a concern to local residents, the public, and park managers.	National Environmental Policy Act
Environmental Justice	Dismissed	Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the... <i>fair treatment and meaningful involvement of all</i>	Executive Order 12898: "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Environmental Justice (continued)		<p><i>people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.</i></p> <p>None of the alternatives being considered would have a disproportionately high and adverse effect on any minority or low-income population or community. This conclusion is based on the following information:</p> <ul style="list-style-type: none"> • The proposals in the alternatives would not result in any identifiable adverse human health effects. Therefore, there would be no direct, indirect, or cumulative adverse effects on any minority or low-income population or community. • The alternatives would not affect American Indian treaty rights—American Indian tribes with treaty-reserved rights would continue to be able to hunt, fish, trap, and gather within Apostle Islands National Lakeshore, consistent with those rights. • No natural resource adverse impacts were identified due to the alternatives that would significantly and adversely affect minority or low-income populations or communities. • The alternatives would not result in any identified effects that would be specific to any minority or low-income community. • The planning team actively solicited public comments during the development of the general management plan and gave equal consideration to all input from persons, regardless of age, race, sex, income status, or other socioeconomic or demographic factors. • During the planning process park staff consulted and worked with the Red Cliff and Bad River Bands of the Lake Superior Chippewa, and the Voigt Intertribal Task Force of the Great Lakes Indian Fish and Wildlife Commission, and will continue to do so in cooperative efforts to improve communications and resolve any problems that occur. The planning team did not identify negative or adverse effects due to the alternatives that would disproportionately and adversely affect these American Indians. 	

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Environmental Justice (continued)		<ul style="list-style-type: none"> No impacts were identified that would substantially alter the physical and social structure of the nearby communities. <p>Therefore this topic will not be addressed further.</p>	
Park Operations Impact Topic			
Park Operations	Retained	This topic covers such things as NPS staffing and workloads, maintenance activities, management flexibility, productivity, operational efficiencies, and response times. Park operations would be affected by the actions in the alternatives, including staffing changes, facility construction, and facility or infrastructure maintenance.	<i>NPS Management Policies 2006</i>
Other Impact Topics			
Conformity with Local Land Use Plans	Dismissed	<p>Actions proposed in the alternatives would not be in conflict with any local, state, or tribal land use plans, policies, or controls for the area.</p> <p>The basic land use of the park as a public recreation and resource management area is in conformance with local land use plans. The creation of additional recreation and visitor service opportunities as proposed in the alternatives would be consistent with existing park land uses or local land use plans. Therefore, this topic was dismissed from further consideration.</p>	Council on Environmental Quality (CEQ) regulations; <i>DO-12 Handbook</i>
Natural or Depletable Resource Requirements and Conservation Potential	Dismissed	None of the alternatives being considered would result in the extraction of resources from the park. Relatively small quantities of depletable resources would be used in the construction of new facilities in the alternatives, but the impact on these resources would be expected to be negligible. Under all of the alternatives ecological principles would be applied to ensure that the park's natural resources were maintained and not impaired.	Council on Environmental Quality (CEQ) regulations
Energy Requirements and Conservation Potential	Dismissed	A few more facilities may be built on the islands under the alternatives. The National Park Service would pursue sustainable practices whenever possible in all decisions regarding park operations, facilities management, and developments in Apostle Islands National Lakeshore. Whenever possible, the National Park Service would use energy conservation technologies and renewable energy sources. Thus it is expected that none of the alternatives would result in an appreciable change in energy consumption compared to current conditions. Any impacts would be negligible.	<i>NPS Management Policies 2006</i> ; Council on Environmental Quality (CEQ) regulations

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Wild & Scenic Rivers	Dismissed	No rivers in the park are included in the nationwide rivers inventory or proposed for wild and scenic river study. Therefore, this topic was dismissed from further consideration.	Section 5(d) National Wild and Scenic Rivers Act
Urban Quality and Design of the Built Environment	Dismissed	The quality of urban areas is not a concern in this plan, except possibly for the development of a new visitor center in Bayfield in some alternatives. Throughout the park, vernacular architecture and park-compatible design would be taken into consideration for structures built under all of the action alternatives. Emphasis would be placed on designs and materials and colors that blend in and do not detract from the natural and built environment. Therefore, adverse impacts would be expected to be negligible. No further consideration of this impact topic is necessary.	CEQ regulations; <i>DO-12 Handbook</i>

RELATIONSHIP OF OTHER PLANNING EFFORTS TO THIS GENERAL MANAGEMENT PLAN / WILDERNESS MANAGEMENT PLAN

Several plans have influenced or would be influenced by the approved Apostle Islands National Lakeshore *General Management Plan / Wilderness Management Plan*. These plans have been prepared by the National Park Service. Some of these plans are described briefly here, along with their relationship to this management plan.

Historic Structure Reports and Cultural Landscape Reports (n.d.)

In late 2009, the National Park Service initiated the development of historic structure reports (HSRs) and cultural landscape reports (CLRs) and an accompanying environmental assessment (EA) for the light stations on Michigan, Outer, Devils, Sand, and Long islands. The results of this documentation project are expected to be finalized in 2011. The park staff anticipates that the combined HSR/CLR/EA for these light stations will provide critical guidance for certain issues that are not completely resolved by the *General Management Plan*, such as deciding

exactly which light houses will be restored or rehabilitated, or whether the Long Island triplex can feasibly be rehabilitated for use as staff housing.

Superintendent's Compendium (2010)

The "Superintendent's Compendium" is a list of designations, closures, permit requirements, and use restrictions promulgated under the discretionary authority of the superintendent. The compendium covers public use limits; public closures and area designations for specific uses or activities; a list of activities that require a NPS permit; regulations regarding preservation of natural, cultural and archeological resources; and general regulations regarding wildlife protection, hunting and fishing, camping and food storage, picnicking, and snowmobiling among other topics. The compendium would be modified as necessary to reflect any changes resulting from implementation of this general management plan.

Wildlife Management Plan and Environmental Assessment for Harvestable Species (2007)

The purpose of this plan was to provide direction for managing hunting and trapping of wildlife in the park, including deer, bear, furbearers, and small game and waterfowl. In particular, the plan focused on the management of white-tailed deer, which have been rapidly increasing on the islands. Implementation of this plan will help achieve the desired conditions related to natural resource management in this *General Management Plan / Wilderness Management Plan*.

Long-Term Ecological Monitoring Plan – Great Lakes Inventory & Monitoring Network (2007)

This plan was implemented in 2006 and includes staff and project funds shared among Apostle Islands National Lakeshore and eight other parks for monitoring a core set of indicators of ecological change. Indicators currently being monitored at the park under this program are: water quality in selected lagoons, a suite of environmental contaminants, a set of permanent terrestrial vegetation plots, and metrics of land cover / land use change. The program also assists the park staff in gathering data on weather and climate, and land birds. The 2007 monitoring plan is consistent with the resource management directions included in the general management plan.

Apostle Islands National Lakeshore Fire Management Plan and Environmental Assessment (2005)

The purpose of this plan was to develop a long-range, comprehensive fire management direction for the park. The plan addressed both wildland fires and prescribed fire for ecological restoration purposes, maintenance of cultural landscapes, or reduction of any excessive fuel loadings. Specific goals for fire management in this plan are consistent with and will help achieve the desired conditions related to natural and cultural resource management and general park administration

described in this *General Management Plan / Wilderness Management Plan*.

Business Plan, Fiscal Year 2001

This plan presented a description of the state of park operations and funding at that time, and outlined park priorities and funding strategies. It detailed the park's operational funding shortfall and communicated investment and operational priorities within that financial deficit. This funding shortfall was a key concern in the development of alternatives for the *General Management Plan / Wilderness Management Plan*.

Resources Management Plan: Apostle Islands National Lakeshore (1998)

This plan was intended to provide guidance on how to best manage the natural and cultural resources of the park. The plan documented the status of the resources, identified natural and cultural resource management efforts and issues/problems, and outlined objectives for future resource management and recommendations for accomplishing those objectives. Although resource management plans are no longer prepared by the National Park Service, a "Resources Stewardship Strategy" will be prepared, which will incorporate the management directions presented in this *General Management Plan / Wilderness Management Plan*.

General Management Plan / Environmental Assessment (1989)

This plan has been the park's guiding document since 1989. This plan provided an overall parkwide management direction, zoned the park, and provided broad strategies for resource management, access and transportation to the islands, visitor use and interpretation, future facility development, and land acquisition and boundary modifications.

Local, State and Regional Plans

There are numerous planning efforts on the local, state, and regional level that affect the park. From local community plans to the Wisconsin *Statewide Comprehensive Outdoor Recreation Plan* to multipark efforts such as the control of invasive fish in Lake Superior, the park staff work with these plans on a regular basis.

NEXT STEPS AND IMPLEMENTATION OF THE PLAN

Following distribution of the *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement* and a 30-day no-action period, a record of decision approving a final plan will be signed by the NPS regional director. The record of decision documents the NPS selection of an alternative for implementation. With the signing of the record of decision, the plan can then be implemented.

Once the planning process is completed, the selected alternative would become the new management plan for the park and would be implemented over 15–20 years. It is important to note that not all of the actions in the alternative would necessarily be implemented immediately.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan / Wilderness Management Plan* could be many years in the future.

This *General Management Plan / Wilderness Management Plan* does not describe how particular programs or actions should be prioritized or implemented. Those decisions will be addressed in more detailed future planning efforts. Other future program and implementation plans, describing specific actions that managers intend to undertake and

accomplish in the park, will tier from the desired conditions and long-term goals set forth in the approved *General Management Plan / Wilderness Management Plan*.

Additional feasibility studies and more detailed planning, environmental documentation, and consultations would need to be completed, as appropriate, before certain actions can be carried out. For example,

- additional detailed environmental documentation may need to be completed for new proposed facilities such as the relocation of certain campsites on Stockton and Oak islands
- appropriate permits may need to be obtained before implementing actions
- appropriate federal, state, and tribal agencies might need to be consulted concerning actions that could affect threatened and endangered species or cultural resources
- American Indian tribes might need to be consulted on actions that could affect the tribes

In addition to funding, the implementation of the approved alternative could be affected by other factors, such as changes in NPS staffing, visitor use patterns, requirements for additional data or regulatory compliance, competing national park system priorities, and uncontrollable environmental changes (see below). More detailed planning and environmental documentation may need to be completed, if appropriate, before some of the actions would be carried out.

Finally, it needs to be recognized that climate change is occurring, which will affect the park in a myriad of different ways, both during the 15- to 20-year life of this plan and beyond. It is likely that park staff will need to employ adaptive management in response to these changes, and that elements of the plan may need to be modified. For example, if lake levels continue to drop some existing docks

may no longer be useable without additional action, while new docks or improvements to docks called for in this plan may no longer be feasible or appropriate. Depending on the nature of climate and resulting changes that occur, the National Park Service would either take additional actions consistent with the management directions in this plan, or if necessary amend or replace the plan. In all cases appropriate environmental compliance would occur before new actions are taken.

Adaptive Management

Adaptive management can be described as a series of repeating incremental steps: collect information on an existing problem, analyze it, propose appropriate interventions, implement the interventions, monitor the interventions, and if needed use additional interventions to address the problem.



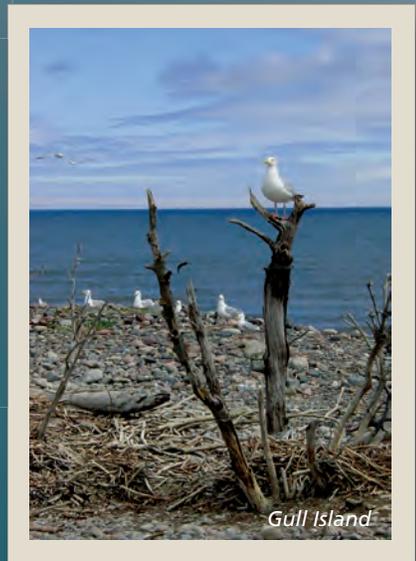
Cat Island



Bear Island



Outer Island Sandspit



Gull Island

**CHAPTER 2:
FRAMEWORK
FOR MANAGEMENT,
USE AND
ADMINISTRATION
OF THE GAYLORD
NELSON WILDERNESS**

INTRODUCTION

This chapter provides general directions for management of the Gaylord Nelson Wilderness. A variety of administrative/operational topics are covered, including the minimum requirement process, natural and cultural resource management, scientific activities/research, administration/operations, and monitoring of wilderness character. All of the management directions included here would not vary among the alternatives in chapter 3—the directions would be followed regardless of which alternative was selected for the *General Management Plan / Wilderness Management Plan*. The directions are based on the Wilderness Act and NPS policies, including *NPS Management Policies 2006*, Director's Order 41 and Reference Manual 41 (“Wilderness Preservation and Management”), white papers from the NPS National Wilderness Steering Committee, and the “Wilderness Stewardship Plan Handbook. Level II Guidance: Wilderness Stewardship Plan EIS/EA Details” (NPS 2004a).

This chapter does not cover several topics that are addressed in chapter 3, including management zoning, user capacity indicators and standards, and campsites in the wilderness area. The management zones and directions provided for these topics in chapter 3, plus the general directions provided in this chapter, and the wilderness management desired conditions and strategies identified in table 1 in chapter 1 altogether make up the management plan for the Gaylord Nelson Wilderness.

WILDERNESS CHARACTER

The 1964 Wilderness Act states, “it is hereby declared to be the policy of Congress to secure for the American people of present and

future generations the benefits of an enduring resource of wilderness.” One of the central mandates of this act is to preserve wilderness character. Section 2(a) states that wilderness areas shall be administered “so as to provide for the protection of these areas, the preservation of their wilderness character . . . ” Section 4(b) states,

“Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character.”

Wilderness character is not specifically defined in the 1964 Wilderness Act, nor is its meaning discussed in the act's legislative history. However, wilderness managers have identified four qualities of wilderness character based on the statutory language of the Wilderness Act (U.S. Forest Service 2008): untrammeled; natural; undeveloped; and offering solitude or a primitive and unconfined type of recreation.

- Untrammeled—This refers to wilderness as being essentially unhindered and free from modern human control or manipulation. Actions that intentionally manipulate or control ecological systems inside wilderness degrade the untrammeled quality of wilderness character—even if an action is taken to restore natural conditions.
- Natural—This means areas that are largely free from effects of modern civilization—there is an absence of people and their activities. It also refers to the maintenance and perpetuation of natural ecological

relationships and processes, and the continued existence of native wildlife and plants in largely natural conditions.

- Undeveloped—The Wilderness Act states that wilderness is “an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation,” “where man himself is a visitor who does not remain” and “with the imprint of man’s work substantially unnoticeable.” Thus wilderness is essentially without permanent improvements or modern human occupation.
- Offering solitude or a primitive and unconfined type of recreation—This quality is about the opportunity for people to experience wilderness. Solitude means encountering only a few people, if any, and experiencing privacy and isolation. There is an absence of distractions, such as large groups of people; mechanization; and unnatural noises, signs, and other modern artifacts. There is freedom from the reminders of modern society. Primitive and unconfined recreation refers to the freedom of visitors to explore with few or no restrictions, and the ability to be spontaneous. It means self sufficiency without support facilities or motorized transportation, and directly experiencing weather, terrain, and other aspects of the natural world with minimal shelter or assistance from devices of modern civilization.

Based on the Wilderness Act’s mandate to preserve wilderness character, this discussion focuses on the extent to which the alternatives in this document affect these characteristics of the Gaylord Nelson Wilderness area. Wilderness character and wilderness experience are analyzed together because much of wilderness character can only be subjectively determined by the visitor’s experience (for example, solitude or freedom of movement). Impacts on natural and cultural resources, visitor access, soundscape,

and other resources in the wilderness area are evaluated elsewhere in the “Environmental Consequences” chapter.

HISTORY OF WILDERNESS AT APOSTLE ISLANDS NATIONAL LAKESHORE

Throughout the planning efforts that led to the establishment of Apostle Islands National Lakeshore, the importance of protecting the wilderness qualities of the islands was recognized. The 1965 Department of Interior proposal for the park stated that the islands “should be considered as primitive and wild areas and as such only minimum basic facilities are necessary for their use and enjoyment.” Assistant Secretary of the Interior Leslie Glasgow stated in testimony at a March 1970 Senate hearing that “The majority of the islands are...ideally suited for wilderness camping, hiking, and natural science studies....” Jordahl (1994) noted that in establishing the park Congress clearly intended that, with the exception of Sand Island, the islands be kept wild and primitive. The state of Wisconsin also directed that wilderness qualities be protected in the park. One of the conditions the Wisconsin legislature stipulated when it donated its lands to the federal government for the park was that this area’s wilderness character be preserved. The legislature stated: “It is the policy of the legislature that the Apostle Islands be managed in a manner that will preserve their unique primitive and wilderness character” (Wisconsin Statutes §1.026(1)(b)).

The 1989 *General Management Plan, Apostle Islands National Lakeshore*, called for a formal wilderness study for Apostle Islands National Lakeshore. In the 2001 Department of Interior appropriations bill, Congress specifically directed the National Park Service to conduct a wilderness study for the park. The wilderness study was completed in May 2004 with a proposal to designate approximately 80% of the park’s land area as wilderness. Later that year Congress approved

designation of the wilderness area as part of the Consolidated Appropriations Act of 2005 (PL 108-447, Division E, §140). On December 8, 2004, President Bush signed the law, establishing the Gaylord Nelson Wilderness. Eighteen of the 21 islands in the park are all or partially within the wilderness area—only Basswood, Sand, and Long islands have no designated wilderness. Figure 3 shows the boundaries of the wilderness area on the ten islands that have nonwilderness areas. (For more details on the history of establishment of the wilderness area, see Krumenaker 2005).

WILDERNESS MANAGEMENT GOALS AND PHILOSOPHY

The Gaylord Nelson Wilderness will be managed in a manner that is consistent with the Wilderness Act, national wilderness policies, and NPS management policies. The primary goals for managing the Gaylord Nelson Wilderness are to

- protect and preserve the area’s natural and cultural resources and values, and the integrity of the wilderness character for present and future generations
- provide for freedom of public use and enjoyment of the wilderness area in a manner that is consistent with the Wilderness Act, NPS management policies, park purposes, and the protection of resources and values
- provide for public understanding and support of wilderness values

As stated in chapter 1, one of Apostle Islands National Lakeshore’s primary purposes is to preserve and protect the park’s wilderness character for use and enjoyment by future generations *as wilderness*. Wilderness character is the combination of biophysical, experiential, and symbolic qualities in an untrammelled and natural state that generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.

The desired conditions for wilderness management, described in table 1 in chapter 1, complement the above goals.

In order to protect and promote wilderness character, wilderness management must consider the purpose of an action and the spirit in which it was carried out. The definition of wilderness in the Wilderness Act identifies two key qualities:

- generally appearing to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable, and
- having outstanding opportunities for solitude or a primitive and unconfined type of recreation

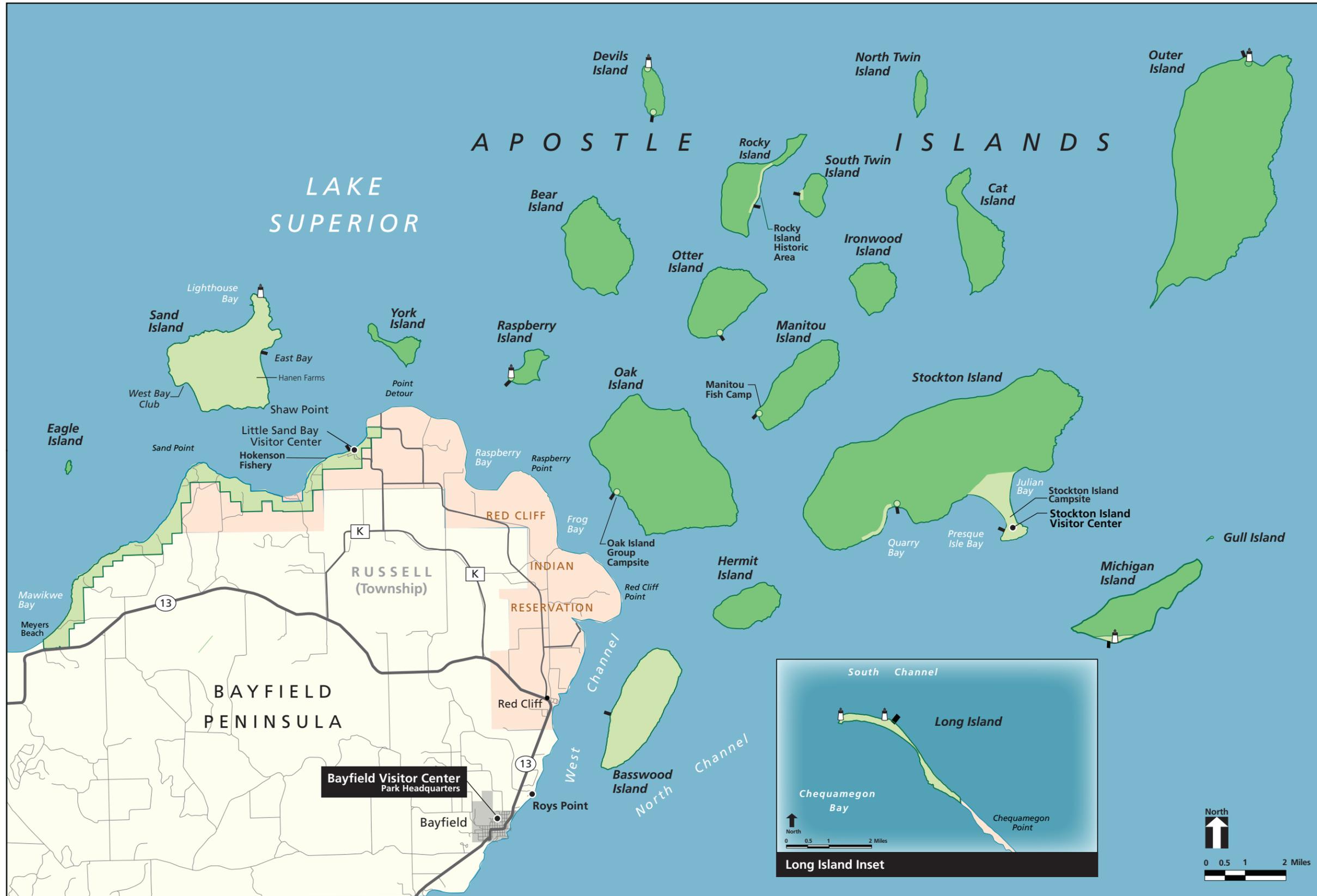
Providing opportunities for solitude would include managing for visitor experiences with the following characteristics:

- freedom from the reminders of society
- privacy and isolation in natural surroundings
- absence of distractions such as large groups, mechanization, unnatural noise, signs, and other modern artifacts within the wilderness area (however, the Wilderness Act offers no protection from sights and sounds originating outside of wilderness)

However, at its essence wilderness character is unseen and immeasurable—a unique challenge of wilderness management. Wilderness character includes the natural and scenic condition of the land, interactions of wildlife, and the integrity of ecological processes. But wilderness character, like personal character, is much more than a physical condition.

The National Park Service recognizes the intangible values of wilderness, and in implementing this plan would forego actions that might have no seeming physical impact

but which would detract from the idea of wilderness as a place set apart; a place where human uses, convenience, and expediency do not dominate; a place where we can know ourselves as part of something beyond our modern society and its creations.



- Gaylord Nelson Wilderness
- Non-wilderness
- (Non-wilderness symbol designates smaller zone)

- Bayfield
- Indian Reservation
- Lands Outside of the Park

- Lighthouse
- Dock

FIGURE 3
Gaylord Nelson Wilderness
 Apostle Islands National Lakeshore
 National Park Service
 U.S. Department of the Interior
 DSC • 633 • 20079 • June 2009

USES, DEVELOPMENTS, AND MANAGEMENT ACTIONS PERMITTED AND PROHIBITED IN WILDERNESS

The following table summarizes what recreational uses, management actions, and developments are permitted and prohibited in

wilderness areas under the Wilderness Act of 1964 and NPS policies.

Table 3: Uses, Developments, and Management in Wilderness

<p>A variety of recreational uses, management actions, and even facilities are permitted in wilderness areas under the Wilderness Act and NPS policies. Among the uses, management actions, and facilities <i>permitted in wilderness</i> are:</p> <ul style="list-style-type: none"> • nonmotorized recreational uses (e.g., hiking, backpacking, picnicking, camping) • hunting and trapping (where otherwise permitted by law, as in the Apostle Islands National Lakeshore) and fishing • American Indian religious activities and other actions recognized under treaty-reserved rights • guided interpretive walks and onsite talks and presentations • wheelchair use by individuals whose disability requires its use, if that wheelchair meets both parts of the definition of a wheelchair as stated in the Americans with Disabilities Act Title V, section 508c: “the term wheelchair means a device designed solely for use by a mobility impaired person for locomotion, that is suitable for use in an indoor pedestrian area” • scientific activities, research, and monitoring (provided the activities are appropriate and use the minimum tool required to achieve project objectives) • management actions taken to correct past mistakes or impacts of human use, including restoration of extirpated species, controlling invasive alien species, endangered species management, and protection of air and water quality • fire management activities (including fire suppression) as approved in the fire management plan • preservation of historic properties eligible for the National Register of Historic Places • trails necessary for resource protection and/or for providing for visitor use for the purposes of wilderness • campsites when essential for resource protection and preservation or to meet other specific wilderness management objectives, including those facilities necessary for resource protection or visitor safety (e.g., tent pads, bear-proof storage boxes) • toilets, signs, and other infrastructure necessary for visitor safety or to protect wilderness resources • certain administrative facilities if necessary to carry out wilderness management objectives (e.g., storage or support structures, ranger station) • uses and facilities permitted for landowners or lessees with valid property rights in a wilderness area <p>NOTE: For administrative management actions and all of the above facilities, the management actions and facilities must be determined to be the minimum necessary to meet the purposes of wilderness (e.g., essential for resource protection and preservation, essential for administration of a wilderness area). See the next section for guidance on the minimum requirement concept.</p> <p>The Wilderness Act also specifically <i>prohibits</i> certain uses and developments:</p> <ul style="list-style-type: none"> • permanent improvements or human habitation (§2(c) of the Act) • structures or installations (§4(c)) • permanent and temporary roads (§4(c))
--

- use of motor vehicles and motorized equipment (except for emergency purposes) (§4(c))
- landing of aircraft (except for emergency purposes) (§4(c))
- other forms of mechanical transport (e.g., bicycles) (§4(c))
- commercial enterprises (except for commercial services that are necessary for realizing the recreational or other wilderness purposes of the area, such as guiding and outfitting) (§4(c) and §4(d)(6))

With the exception of permanent roads and commercial enterprises, the Wilderness Act does recognize that the above uses *may be permitted* if necessary to meet the minimum requirements for the administration of the area as wilderness or for emergency purposes.

In addition to the above prohibitions, NPS policies also *prohibit* some developments:

- new utility lines
- permanent equipment caches (unless necessary for health and safety purposes or determined to be necessary through a minimum requirement analysis)
- borrow pits (except for small quantity use of borrow material for trails)
- new shelters for public use
- picnic tables, except when necessary for resource protection
- interpretive signs, trails, and waysides (unless necessary for visitor safety or to protect wilderness resources)

APPLYING THE MINIMUM REQUIREMENT CONCEPT

The Wilderness Act of 1964 states in section 4(c)

except as necessary to meet the minimum requirement for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area) there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing aircraft, no other form of mechanical transport, and no structure or installation... within a wilderness area.

The act allows for the administrative exception, but it is an exception not to be abused and to be exercised very sparingly and only when it meets the test of being the minimum necessary for wilderness management. NPS policy dictates that all management decisions affecting wilderness must be consistent with the minimum requirement concept.

In wilderness, how a management action is carried out is as important as the end product.

Minimum Requirement Concept

“The minimum requirement concept is a documented process used to determine if administrative actions, projects, or programs undertaken by the National Park Service or its agents and affecting wilderness character, resources, or the visitor experience are necessary, and if so how to minimize impacts.”

NPS Management Policies 2006 (6.3.5)

When determining the minimum requirement, the potential disruption of wilderness resources and character will be considered before, and given more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character in the long run and/or have localized, short-term adverse impacts will be accepted.

The second part of the minimum requirement concept is identifying the minimum tool, which is defined as the least intrusive tool, equipment, device, force, regulation, or practice that would achieve the wilderness

management objective safely and with the least impact on wilderness resources.

To apply the minimum requirement concept, a minimum requirement analysis will be completed for proposed management actions, including but not limited to natural and cultural resource projects, administrative facilities, trail and campsite projects, and research. (Where actions take place outside the wilderness, consideration should also be given to how those actions may have indirect effects on wilderness character and values.) Completion of the minimum requirement analysis is part of the environmental screening process and accompanies the appropriate environmental compliance and may be subject to public review prior to approval.

The minimum requirement analysis is a two-step process. Step 1 helps determine whether or not the proposed management action is appropriate or necessary for administration of the area as wilderness, and does not pose a significant impact to wilderness resources and character. The assessment of adverse impacts must consider physical resources within the wilderness as well as wilderness character and values. Step 2 describes alternatives for the proposed action and evaluates each to determine if the techniques and tools and equipment (minimum tool) needed to ensure that overall impacts to wilderness resources and character are minimized. The minimum requirement analysis worksheet and instructions for its completion are in appendix B.

APPROPRIATE NATURAL RESOURCE CONSERVATION AND RESTORATION ACTIVITIES IN WILDERNESS

The 1964 Wilderness Act defines wilderness as a place that “in contrast with those areas where man and his own works dominate the landscape, is ... an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” It is to be “protected and managed so

as to preserve its natural conditions” and “generally *appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.*”

Although these ideas have much in common, they aren’t the same. As established by the act, the objectives to manage wilderness for the forces of nature (ecological conditions, what some consider “naturalness”) and to keep the wilderness untrammelled and to minimize the impacts of people (what some consider “wildness”) can be in conflict. Notwithstanding the islands’ long and continuing history of use by American Indians and the park’s embrace of their history in the Gaylor Nelson Wilderness, the National Park Service must grapple with how to manage those parts of the wilderness where former logging camps, quarries, and farms are present.

Although hands-off management was probably once sufficient to keep wilderness both natural and untrammelled, land managers now realize that human use of the landscape has left some areas with nonnative or invasive plants; threatened, endangered, and extirpated plants and animals; compacted soils; artificial fire regimes; trash piles; etc. The National Park Service is fully committed to the preservation of the tangible remnants that are historically significant (an equally challenging concept, also defined in federal law). However, NPS managers are faced in some other cases with the dilemma of whether to attempt to restore natural conditions or to leave an area alone. If the latter path is selected, some areas will restore themselves to ecological integrity over time, but other areas are likely to remain in an unnatural state without active intervention. Further complicating the picture, human-induced climate change will likely favor some species over others, and will likely lead to unprecedented ecological conditions that, if managers do not intervene, may appear “untrammelled” but will hardly be “natural.” Managers will be faced with the dilemma of artificially aiding some species to try to

preserve them in their native habitat, or else accept their loss as the conditions they require disappear from the park.

With regard to natural resource management in wilderness, NPS wilderness policies state:

The principle of non-degradation will be applied to wilderness management, and each wilderness area's condition will be measured and assessed against its own unimpaired standard. Natural processes will be allowed, in so far as possible, to shape and control wilderness ecosystems. Management should seek to sustain natural distribution, numbers, population composition, and interaction of indigenous species. Management intervention should only be undertaken to the extent necessary to correct past mistakes, the impacts of human use, and the influences originating outside of wilderness boundaries. Management actions... should be attempted only when the knowledge and tools exist to accomplish clearly articulated goals. (NPS "Reference Manual 41: Wilderness Preservation and Management," §6.3.7)

Thus, conservation and restoration activities should occur only when necessary, and the threshold for taking management actions (intervention) is particularly high in wilderness. Managers should err on the side of intervening as little as possible in wilderness.

The question of when such actions should be taken is often difficult to answer. In light of how much past and present human activities have altered the Gaylord Nelson Wilderness, including logging, recreational uses, clearing of areas and developments, the introduction of nonnative species, and climate change, the concept of maintaining "natural conditions" does not provide much guidance on whether or not to actively intervene (see the description of the park's vegetation in chapter 4 and Cole et al. 2008 for more discussion on the question of naturalness in protected areas).

Managing for Wilderness Characteristics

Two key terms need to be considered in determining whether conservation and restoration activities are appropriate in wilderness:

Wild—untrammelled; uncontrolled; unconstrained; without sign of people or intentional human control; on its own terms; self-willed; free.

Natural—unimpaired; ecologically intact, with the full complement of native species; sustainable; unpolluted.

These terms, ideally, are not mutually exclusive. Scientists, philosophers, and managers continue to debate their meanings as well as the intent of the Wilderness Act. Did the authors of the act anticipate a world affected by climate change and other human influences that would pervade every corner of the globe, no matter how remote? The challenge for the National Park Service clearly is how to manage for both wild and natural, without compromising either, in the Gaylord Nelson Wilderness.

In considering whether or not to take action, managers of the Gaylord Nelson Wilderness in Apostle Islands National Lakeshore should define as precisely as possible what outcomes are desired before determining how much intervention is warranted. The following questions (as well as the minimum requirement process criteria) can help guide managers in their decision:

- Is the extent and significance of diminished naturalness known?
- Is action needed to maintain ecological integrity—the presence of all appropriate elements and processes operating at appropriate rates?
- Is the action needed to promote resilience of the wilderness—the capacity of the system to absorb change and still persist without undergoing a fundamental loss of character? Is action needed because little

semblance of natural conditions is possible without intervention?

- What is the intensity of the proposed action—how big an area will be affected over how long a time? Is the intervention short or long term?
- Is there sufficient understanding about reference conditions and processes, as well as the long-term effects of the action?
- What are the benefits and risks of taking action versus not taking action? Is the threat or change facing the wilderness considered to be a high priority? Does the action have the most potential to make a difference?
- Is there public understanding and support for the action?

(Additional questions and ideas can be found in Cole and Young 2010; Cole et al. 2008; Landres 2004; and Landres 2002.)

The NPS National Wilderness Steering Committee also has provided a guide for evaluating the appropriateness of restoration and other conservation activities in wilderness. Recognizing that which actions should be taken versus avoided will be location specific and subjective, the following three-tiered framework can help managers in structuring their decision.

Class I: Short-term wilderness disturbance; long-term wilderness character enhancement

This class of activity entails one-time reversals of anthropogenic changes that, once accomplished, are self-sustaining. Users of wilderness might well encounter restoration activities that would typically result in impacts to wilderness character lasting a season to perhaps several years. Often, these impacts include temporary markers such as flagging, or tags and radio-collars on animals. Some of this, such as dam removal, may require heavy equipment. Upon completion, however, traces of the restoration activity would be

extinguished over a short period of time, while the benefits of “re-wilding” and naturalness to wilderness character would be long term.

Examples

- reintroduction of self-sustaining native species
- extirpation of invasive alien species

Class II: Long-duration or recurring entry; benefits and costs to wilderness character

Many ecosystems that include wildernesses suffer anthropogenic disturbances for which managers lack the knowledge, the legal authority, or the financial resources to correct permanently at the present time. For example, introduced weedy plants often invade natural areas from adjacent lands, and require regular removal and frequent monitoring. These nature-maintenance activities reflect the reality that many designated wildernesses are simply too small or disconnected to sustain their full suite of ecosystem functions without intervention. NPS managers must ultimately weigh the restoration benefits to the ecosystem against the impacts to other aspects of wilderness character.

Examples

- periodic control of persistent introduced species
- reintroduced species requiring continuing support

Class III: Support of laws or NPS policies; don't directly enhance wilderness character

These activities can present substantial impacts on wilderness character. They clearly violate the intent of the Wilderness Act. Some of these, such as control of pests, reflect the incapacity of some landscapes designated as wilderness to function as such either ecologically or politically. On the other hand, some severe interventions, such as the

removal of native organisms for restoration elsewhere, illuminate the fundamental and unavoidable connections between many wildernesses and their surrounding, more modified landscapes. Ultimately, decisions in this category may require a public review for their resolution.

Examples

- habitat modification for endangered species
- regulation of predator or prey numbers when an area is too small for natural regulation or natural controls have been lost
- control of native pests or dangerous species to protect life or property outside wilderness
- removal of native organisms in support of restoration elsewhere

FIRE MANAGEMENT

The park's 2005 *Fire Management Plan / Environmental Assessment* provides guidance on management of fire in the wilderness area. Human-caused fires would be suppressed, although the use of minimum impact suppression techniques would be required. Natural ignition of wildland fires would be permitted to occur, in keeping with the idea that natural forces should predominate in wilderness. Prescribed burns could be proposed in wilderness to restore "natural conditions."

As noted in Director's Order 41: "Wilderness Preservation and Management," all wildland fires (unplanned ignitions) in the Gaylord Nelson Wilderness will be managed to include the application of minimum requirement suppression techniques (if needed), and the consideration of firefighter and public safety, a cost/benefit analysis, and sensitive natural and cultural resources.

MANAGEMENT OF CULTURAL RESOURCES

The Gaylord Nelson Wilderness includes many cultural resources, including archeological sites, historic structures, ethnographic resources, and cultural landscapes. Cultural resources are included under the Wilderness Act as part of wilderness and historic values to be protected. In addition, laws intended to preserve the nation's cultural heritage, including the National Historic Preservation Act, Archeological Resources Protection Act, and American Indian Religious Freedom Act, (among others), all fully apply in wilderness. Any adverse impacts on cultural resources in the Gaylord Nelson Wilderness will be avoided if at all possible. Any actions that involve ground disturbance or possible disturbance of historic structures or cultural landscapes must involve mitigative measures developed by the park staff in consultation with the Wisconsin state historic preservation office and, as appropriate, the Red Cliff and Bad River Bands of the Lake Superior Chippewa.

As called for in §6.3.8 of Reference Manual 41, "Wilderness Preservation and Management," historic properties eligible for the National Register of Historic Places in the Gaylord Nelson Wilderness will be protected and maintained according to the pertinent laws and policies governing cultural resources. However, the methods used to protect and maintain cultural resources must be consistent with the preservation of wilderness character and values—the provisions of the Wilderness Act must be complied with when conducting cultural resource management activities, including inventory, monitoring, treatment, and research. If these management actions are proposed in the wilderness area, they must be evaluated in the minimum requirement process to minimize negative impacts to wilderness character and values.

It is important to stress that many actions affecting cultural resources in the wilderness

area will only be undertaken after appropriate consultations with the Wisconsin state historic preservation office, associated American Indian tribal governments, other interested agencies or organizations, and the general public.

If appropriate, park staff may manage encroaching vegetation growing directly on or within former logging camp ruins and quarries in the wilderness area to protect them from accelerated decay. Any such action would be subject to the minimum requirements process, and appropriate NEPA compliance and consultations with the state historic preservation office, associated tribal historic preservation offices, other interested agencies, and members of the general public.

AMERICAN INDIAN TREATY RIGHTS AND ACCESS

As noted in chapter 1, several Lake Superior Chippewa tribes have hunting, trapping, and gathering rights guaranteed by treaty in Apostle Islands National Lakeshore, including the wilderness area. The National Park Service will honor those legally established rights and cooperate with the tribes holding those rights. American Indian access also will be permitted in the wilderness for sacred or religious purposes consistent with the intent of the American Indian Religious Freedom Act, Executive Order 13007: “Indian Sacred Sites” of May 24, 1996, the Wilderness Act, and related laws and policies.

HUNTING AND TRAPPING

As noted in chapter 1, hunting and trapping are permitted uses in the park, including the wilderness area. Harvest limits and dates and seasons for hunting and trapping are the same in the wilderness area as in the rest of the park. Approved hunting and trapping methods will be consistent with NPS wilderness management.

ACCESSIBILITY FOR PERSONS WITH DISABILITIES

NPS management policies ensure that equal opportunities are available for people with disabilities in all programs and activities, including the opportunity to participate in wilderness experiences. In addition, under section 504 of the Rehabilitation Act and 29 CFR part 17, the National Park Service has legal obligations to ensure that no person who has a disability is denied the opportunity to participate in a program solely because they have a disability. All people, including those who have disabilities, are to be allowed to participate as long as they are able “to achieve the purpose of the program or activity without modification to that program or activity that fundamentally alters the nature of that program or activity.”

The 1968 Architectural Barriers Act (ABA), passed a year after the Wilderness Act, requires that when a federal agency constructs or alters a facility, that facility is to be accessible. Congress clarified the issue of accessibility in federal wilderness in the 1990 Americans with Disability Act (ADA), even though this act does not normally apply to federal agencies.

Title V section 507 of the Americans with Disabilities Act specifies that, in federally designated wilderness, a person who has a mobility impairment may use a wheelchair that (1) is designed solely for use by a mobility impaired person for locomotion, and (2) is suitable for use in an indoor pedestrian area. Wheelchairs or mobility devices that meet both parts of this definition are legally recognized as wheelchairs when used for locomotion by a person who has impaired mobility, may be used anywhere foot travel is allowed, and are not to be considered as forms of mechanical transport. Section 507 of the act further states that “no agency is required to provide any form of special treatment, or accommodation, or to construct any facility or modify any conditions of lands within a wilderness area to facilitate such use.”

In the case of the Gaylord Nelson Wilderness, all visitors will be encouraged to enjoy the wilderness on its own terms. Few additional facilities are anticipated during the life of this plan, and those that are constructed will only be added if they provide essential environmental protection and are appropriate to the setting. In those cases, the facility design will be accessible consistent with federal law and NPS policy. Whenever feasible, the National Park Service will go beyond the legal requirements and make the facilities as accessible as possible using a wilderness-appropriate primitive design. The park staff will work with Wilderness Inquiry, Inc., on adopting best practices with regard to accessibility in the Gaylord Nelson Wilderness. (The National Park Service has a national memorandum of understanding with Wilderness Inquiry, Inc., to provide assistance related to the concerns and needs of disabled people.)

SPECIAL EVENTS

NPS *Management Policies 2006* (6.4.5) states that the agency will not sponsor or issue permits for special events in wilderness if the events are inconsistent with wilderness resources and character, or if they do not require a wilderness setting to occur. Permits will not be granted for competitive events, such as races, to take place in wilderness.

INTERPRETATION AND EDUCATION

Public information is a critical component of any wilderness management program. Education is important for park visitors, the public who do not visit the park, and NPS and partner employees. With regard to wilderness, education and interpretation efforts will focus on the following areas:

- promoting and perpetuating public awareness and appreciation for wilderness character, resources, and ethics while providing for acceptable use limits

- fostering an understanding of the concept of wilderness that includes respect for the resource and willingness to exercise self-restraint in demanding access to it
- encouraging the public to use and accept wilderness on its own terms, recognizing wilderness is an undeveloped, primitive environment and that there are potential risks and responsibilities involved in using and enjoying wilderness
- fostering public stewardship, Leave No Trace ethics, and minimizing adverse human impacts to wilderness resources and values
- presenting information on wilderness safety
- as the wilderness is named for Gaylord Nelson, information and education efforts will also seek to educate visitors about the former Wisconsin governor and senator and his conservation legacy

Wilderness character and resources, as well as the above points, will be included in the park's interpretation and educational program and as an integral element in the park's long-range interpretive plan and annual implementation plan. Appendix I of Reference Manual 41 provides a description of primary interpretive themes for NPS wilderness areas.

A variety of education and interpretive outreach approaches may be used to provide visitors and the public with information on the Gaylord Nelson Wilderness—such as talks and other presentations, waysides, publications, exhibits in visitor centers, web page sites, and curriculum-based education programs—so long as they do not adversely affect the wilderness character. NPS staff will work closely with local educators to develop appropriate curricula and identify appropriate activities in the wilderness.

Staff education is also an important part of the wilderness education effort. Wilderness awareness training will be incorporated into all appropriate training programs, such as

orientation training for seasonal and new staff, concessions staff, and volunteers.

Education may also be used as a tool for addressing wilderness use and management problems, and will generally be applied before more restrictive management actions.

CAMPING PERMITS

Permits are currently required for all individuals and groups camping in the park, including designated sites and designated camping zones in the wilderness. Permits can have many uses, including the following:

- providing education concerning resource protection and Leave No Trace practices
- providing education concerning safety issues
- providing a means to track visitor use
- identifying a starting point for search and rescue efforts
- regulating use

COMMERCIAL SERVICES

Under the Wilderness Act commercial enterprises are not permitted in wilderness, with the exception of commercial services deemed necessary for realizing the recreational or other wilderness purposes of the area. Under *NPS Management Policies 2006* (10.3.1) commercial services need to be determined to be an appropriate use of the park.

Commercial guiding (e.g., kayaking, fishing, sailing, and backcountry trips; adventure boat tours; and water taxi services) is a permitted use in Apostle Islands National Lakeshore and is consistent with the park's wilderness management objectives and has long been deemed appropriate for the following reasons:

- services are consistent with the purposes and values for which the park and wilderness area were established, as well

as with applicable laws, regulations, and policies

- services are consistent with laws, regulations, and policies
- services do not compromise public health, safety, or well-being
- services do not result in unacceptable impacts on wilderness resources and values
- services do not unduly conflict with other authorized park uses and activities or services outside the park
- services do not monopolize limited recreational activities at the expense of the general public

Commercial use authorization (CUA) permits are required of all businesses, groups, organizations, or individuals that provide guided trips and/or services for hire in the park. For nonprofit groups special use permits are required. Both types of permits do not limit the number of organizations providing these services.

The use of permanent equipment and supply caches by commercial operators is prohibited within all areas of the park. Commercial operators also must adhere to the minimum requirement concept in all aspects of their activities in wilderness.

SCIENTIFIC ACTIVITIES AND RESEARCH

The Wilderness Act, *NPS Management Policies 2006* (6.3.6), and Director's Order 41 all provide for and encourage scientific activities in wilderness when they are consistent with the National Park Service's responsibilities to preserve and manage wilderness.

Scientific activities are to be encouraged in wilderness, provided that the benefits of what may be learned outweigh the negative impacts on other wilderness values.... The increase of scientific knowledge, even if it serves no immediate management purpose, may

be an appropriate wilderness research objective when it does not compromise wilderness resources and character. (Director's Order 41)

Thus, scientific activities that potentially impact wilderness resources or values, including access, ground disturbance, use of equipment, and animal welfare, would be permitted provided the benefits of the gained knowledge outweigh the impacts to wilderness resources or values.

However, Director's Order 41 also stresses it is important for scientists to understand that their research be conducted in accord with wilderness preservation principles. All scientific activities, including the installation, servicing, removal, and monitoring of research devices, must be evaluated using the minimum requirement concept and include documented compliance that assesses impacts against benefits to wilderness. Applications for research and scientific work in the wilderness area must include a minimum requirements analysis of the project's methodologies. Scientific activities that involve activities or structures prohibited in §4(c) of the Wilderness Act (e.g., motorized equipment, mechanical transport) may occur in wilderness if several requirements are satisfied (see 6.3.6.1 in the *NPS Management Policies 2006*).

Research and monitoring devices may be installed and operated in the Gaylord Nelson Wilderness if

- the desired information is essential for the administration and preservation of wilderness and cannot be obtained from a location outside wilderness without a significant loss of precision and applicability; and
- the proposed device is the minimum requirement necessary to accomplish the research objective.

The devices will be removed when determined to no longer be essential. Permanent equipment caches are prohibited

in wilderness; temporary caches may be permitted if they satisfy the minimum requirement concept.

CAMPSITE DESIGNATION CRITERIA

Existing designated campsites may need to be reconfigured and/or additional designated campsites may need to be established in the wilderness area. New sites would be selected based on the following criteria:

- resource protection would be of primary importance
- campsites would be placed out of view of trails
- campsite placement would be subject to cultural resource mitigation

Appendix C provides further details on campsite design considerations for wilderness and nonwilderness.

NPS ADMINISTRATION / OPERATIONAL ACTIVITIES AND FACILITIES

Administrative Use of Motorized or Mechanized Equipment

Administrative use of motorized or mechanized equipment must meet the requirements of the minimum requirement concept (see "Applying the Minimum Requirement Concept" earlier in this chapter and in appendix B). Convenience or economic efficiency alone are not considered sufficient justification for the use of motorized or mechanized equipment. Acceptable uses would include emergencies where human life is at risk, or where use of this equipment is determined to be the least intrusive method on wilderness character and values to accomplish management objectives.

Within two years of completion of this plan, broad minimum requirement analyses will be done for routine maintenance projects in the wilderness (e.g., trails, campsites). Thus, the minimum requirement process will not have

to be applied to each individual project in the future unless there are Wilderness Act exceptions.

Use of Native Materials

In keeping with wilderness character, local natural materials are preferred when possible to repair or construct wilderness facilities (e.g., water bars, campsites) or restore desired conditions to impacted areas. Any proposed rehabilitation or construction will need to go through the environmental screening process, including the completion of the minimum requirement analysis, and be approved by the wilderness committee.

Emergency Services

Protecting human health and safety is a priority for park managers. Although wilderness is to be experienced on its own terms with inherent risks and challenges, NPS staff will continue to provide emergency services for all park visitors. During emergency incidents, consideration will be given to protecting the park's wilderness resources. While hazard mitigation may be required, under no circumstances will pure convenience dictate the destruction of any wilderness resources. Leave No Trace minimum impact techniques will be incorporated into incident action plans and used whenever possible to lessen impacts to wilderness resources during emergency operations.

NPS *Management Policies 2006* (6.3.5) provide for the administrative use of motorized equipment or mechanical transport in emergency situations involving human health and safety. For the purposes of this plan, emergency situations include the following:

- response to those in need of medical or physical assistance when threats to human health and safety are reasonably assumed
- response to those who are determined to be unjustifiably overdue and threats to human health and safety are reasonably assumed

- any response to downed aircraft
- any response to an “unknown emergency” (e.g., mirror flash, second-hand visitor report, radio distress signal)
- any reported disaster
- special law enforcement operations when threats to human health and safety are reasonably assumed
- responses to wildland fires that threaten life, property, cultural, or natural resources

Logistics of the park, however, do not necessarily mean that use of motorized/mechanized equipment will either decrease response time or increase visitor safety.

Administrative Facilities

As stated in NPS *Management Policies 2006* (6.3.10), NPS administrative facilities (e.g., patrol cabins, radio repeater sites, storage or support structures) will be limited in wilderness to the types and minimum number essential to meet the minimum requirements for the administration of the wilderness area. Permanent storage caches are prohibited in wilderness unless necessary for health and safety purposes or when they are determined to be necessary through a minimum requirements analysis.

A decision to construct, maintain, or remove an administrative facility will be based primarily on whether or not the facility is required to preserve wilderness character or values, not on considerations of administrative convenience, economic effect, or convenience to the public or park staff.

No administrative facilities are within the Gaylord Nelson Wilderness, and none are foreseen as being needed to administer the wilderness area.

Signs

Signs detract from wilderness character and make the imprint of people and management

more noticeable. Consequently, NPS *Management Policies 2006* (6.3.10.4) state that only signs necessary for visitor safety or to protect wilderness resources are permitted in wilderness. Signs that provide other information, such as natural and cultural history, will not be located within the wilderness area. If needed, signs in the Gaylord Nelson Wilderness would be the minimum size and number necessary and would be compatible with their surroundings. Inappropriate signs predating the establishment of the wilderness will be removed within two years of the implementation of this plan.

Monitoring of Wilderness Character

Wilderness character has been described as the combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands. These ideals combine to form a complex and subtle set of relationships among the land, its management, its users, and the meanings people associate with wilderness. (Interagency Wilderness Character Monitoring Team 2008)

Both the Wilderness Act and NPS *Management Policies 2006* (6.3.1) mandate that the Gaylord Nelson Wilderness character be preserved. To ensure that wilderness character is not deteriorating or being altered requires monitoring. NPS *Management Policies 2006* (6.3.6.2) also require that conditions and long-term trends of wilderness conditions be monitored.

Visitor impacts on wilderness and monitoring of user capacity indicators and standards is one facet of wilderness character. However, these indicators are addressed in chapter 3. This section instead focuses on monitoring indicators of wilderness character that are not directly tied to visitor impacts (although there may be some overlap between the two sets of indicators). The monitoring being addressed in this section is also different from the NPS

inventory and monitoring program's vital signs effort (although again there may be some overlap in the monitoring efforts).

The Interagency Wilderness Character Monitoring Team has identified four key wilderness qualities may be monitored as an approximation of wilderness character:

- untrammeled—wilderness is essentially unhindered and free from modern human control or manipulation
- natural—wilderness ecological systems are substantially free from the effects of modern civilization
- undeveloped—wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation
- solitude or primitive and unconfined recreation—wilderness provides outstanding opportunities for visitors to be alone or remote from signs of society, to be self-reliant, to be free from the constraints of culture, to experience personal challenge, self-discovery, and physical and mental inspiration

The following indicators have been identified as being appropriate and feasible to monitor wilderness character in the Gaylord Nelson Wilderness. These indicators may be replaced and/or additional indicators may be identified if better ways are found to measure changes in wilderness character, if the indicators prove not to be sufficiently sensitive to measuring changes, or if the indicators prove not to be cost-effective to check regularly. Some of these indicators are already monitored by park staff and/or are monitored to satisfy Government Performance and Results Act (GPRA) requirements. For more information on these indicators see the Interagency Wilderness Character Monitoring Team (2008), Landres et al (2009), and NPS (2007). If monitoring shows a trend of downward quality, indicating degradation of wilderness character, then park managers would take appropriate action to address the impacts and

restore the character of the Gaylord Nelson Wilderness.

Organization

All Apostle Islands National Lakeshore management divisions will continue to be involved in wilderness management. As directed by NPS Director's Order 41, all positions having significant wilderness responsibilities will be supported by position descriptions that detail these responsibilities.

The park's backcountry management team will continue to facilitate the review of projects and management actions proposed within the wilderness and associated analyses (e.g., minimum requirement analysis). The backcountry management team will continue to include representatives of the interpretation and education, protection, planning and resource management, and facility management divisions. Periodic meetings will continue to be held to evaluate

proposals, provide mitigation when necessary, and make recommendations to the superintendent.

The park's chief of planning and resource management is designated as the park's wilderness coordinator. This is a collateral duty of the chief of planning and resource management. The chief of planning and resource management has direct responsibility for the development, coordination, communication, implementation, and accountability for the park's wilderness program. This individual also serves as a liaison to regional and national wilderness programs.

Wilderness training will continue to be a priority for park staff with significant work responsibilities within the wilderness area, managing resources, or working with the park's wilderness visitors.

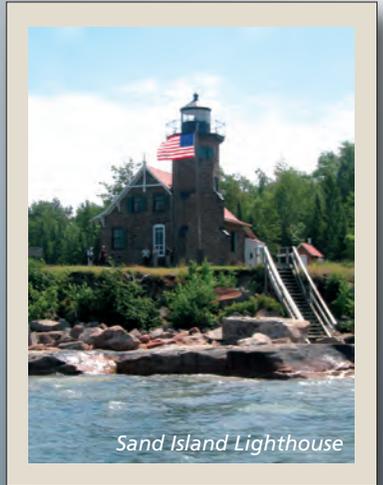
Table 4: Wilderness Character Indicators to be Monitored in the Gaylord Nelson Wilderness

Wilderness Character Quality	Indicator
Untrammeled Quality	Number of actions taken or authorized by park staff to manage plants, animals, pathogens, soil, water, or fire in the wilderness
Natural Quality	Number of indigenous species that are listed as threatened, endangered, sensitive, or of concern
	Total acres of the wilderness where nonnative vegetation is present and not considered contained*
	Extent and magnitude of change in water quality
Undeveloped Quality	Extent of wilderness acreage affected by development that does not support wilderness uses, such as homes/cabins, temporary structures, and utility line corridors*
	Type and amount of administrative and nonemergency use of motor vehicles, motorized equipment, or mechanical transport*
	Occurrences of noncompliant uses, including unauthorized use of motor vehicles, motorized equipment, or mechanical transport*
Solitude or Primitive and Unconfined Recreation Quality	Type and extent of management restrictions (e.g., requiring permits for wilderness visits, area closures, prohibitions or limited use of campfires)

*Indicators monitored to satisfy requirements of the Government Performance and Results Act.



View of Outer Island Sandspit



Sand Island Lighthouse

CHAPTER 3: THE ALTERNATIVES



Julian Bay on Stockton Island



Old Michigan Island Lighthouse

INTRODUCTION

This chapter describes four alternatives for managing Apostle Islands National Lakeshore over the next 15–20 years. The four alternatives embody the range of what the public and NPS staff want to see accomplished regarding natural resource conditions, cultural resource conditions, visitor use and experience conditions, and management at Apostle Islands National Lakeshore. Alternative 1, the no-action alternative, presents a continuation of current management direction and is included as a baseline for comparing the consequences of implementing each alternative. The action alternatives are alternatives 2 (the NPS preferred alternative), 3, and 4. These alternatives present different ways to manage resources and visitor use and to improve facilities and infrastructure in the park.

As noted in the “Foundation for Planning and Management” section in chapter 1, the National Park Service would continue to follow existing agreements and servicewide mandates, laws, and policies regardless of the alternatives considered in this plan. These mandates and policies are not repeated in this chapter. Likewise, parkwide desired conditions (and potential strategies to achieve those conditions) for topics ranging from ecosystem management to sustainable design and practices are presented in chapter 1 and would apply regardless of which alternative is ultimately selected for implementation. The wilderness management directions and policies described in chapter 2 also are not repeated here.

Before describing the alternatives, this chapter explains how the alternatives were developed and the preferred alternative was identified. Other sections describe the management zones (a key element of the alternatives) and the approaches taken to address user capacity

and boundary adjustments. After the alternatives are described, mitigative measures that would be used to reduce or avoid impacts are listed, needed future studies and implementation plans are noted, the environmentally preferable alternative is identified, and several actions are noted that the planning team considered but dismissed. At the end of the chapter, there are tables that summarize the key differences among the alternatives, the costs of the alternatives, and the differences in impacts that would be expected from implementing each alternative based on the analysis in “Chapter 5: Environmental Consequences.”

FORMULATION OF THE ALTERNATIVES

Many aspects of the desired conditions of Apostle Islands National Lakeshore are defined in the establishing legislation, the park’s purpose and significance statements, and the servicewide mandates and policies that were described earlier. Within these parameters, the National Park Service solicited input from the public, NPS staff, governmental agencies, tribal officials, and others regarding issues and desired conditions for Apostle Islands National Lakeshore. Planning team members gathered information about existing visitor use and the condition of the park’s facilities and resources. Then a set of management zones and management alternatives were developed to reflect the range of ideas proposed by NPS staff and the public.

The three action alternatives included in this chapter were developed based on seven key issues identified by the public and NPS staff in the scoping period (see the “Scope of the General Management Plan / Wilderness

Management Plan / Environmental Impact Statement” section). These issues were described in a July 2006 newsletter. For each of the issues a series of management options or actions were identified. After holding public meetings and analyzing public comments on these issues and management options, the planning team grouped the options into different alternatives. Each alternative is intended to effectively and efficiently manage the park and address all of the issues. All of the action alternatives seek to incorporate both resource protection and visitor opportunities, and were developed to be functional and viable. Although all of the alternatives are consistent with maintaining the park’s purposes, significance, and fundamental resources and values, they vary in their focus with regard to opportunities for visitor experiences and facilities on the islands and mainland unit.

The alternatives focus on *what* resource conditions and *what* visitor uses, experiences, and opportunities should be at Apostle Islands National Lakeshore rather than on details of *how* these conditions, uses, and experiences should be achieved. Thus, the alternatives do not include many details on resource or visitor use management.

More detailed plans or studies would be required before most conditions proposed in the alternatives are achieved. The implementation of any alternative also depends on future funding and environmental compliance. This plan does not guarantee that funding will be forthcoming. The plan establishes a vision of the future that would guide day-to-day and year-to-year management of the park, but full implementation could take many years.

POTENTIAL FOR BOUNDARY ADJUSTMENTS

The National Park and Recreation Act of 1978 requires general management plans to address whether boundary modifications should be made to park units. In the case of Apostle

Islands National Lakeshore no specific boundary adjustments were identified as being needed at this time. Thus, none of the alternatives propose changes to the park boundary. However, this plan does not prohibit small additions, such as land for a new visitor center or operational (administrative) facility considered in the alternatives, or other administrative uses that may be identified in the future by other land planning processes. The purchase of any lands for visitor or operational facilities outside the existing NPS boundaries of the mainland unit would likely require congressional approval. This plan also does not preclude future consideration of boundary adjustments should needs or conditions change.

One potential change may be appropriate after consideration of the potential impact of falling lake levels due to climate change on the park’s ¼-mile boundary. Over the long term, as more land emerges from the lake, the park’s water zone would shrink if the ¼ mile is fixed at its location when the park was established; it is possible that eventually, in some areas, the park boundary would not reach to Lake Superior. In the future, consideration may be given to a redefinition of the boundary (which would require the concurrence of the State of Wisconsin and, most likely, federal legislation) to adjust the boundary along with lake levels to assure that the park always has at least ¼ mile of Lake Superior within its boundary.

IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The preferred alternative was developed through a process called “Choosing by Advantages” (CBA). Using this process, the planning team identified and compared the relative advantages of each alternative according to a set of factors. The benefits or advantages of each alternative were compared for each of the following CBA factors:

- Preservation of natural resources (protection of vegetation/soils, protection of wildlife, protection of coastal processes)

- Protection of wilderness values (apparent naturalness, opportunities for solitude or primitive unconfined recreation)
- Preservation of cultural resources (protection of light stations, protection of other historic structures/properties, protection of archeological and American Indian ethnographic resources)
- Ability to tell the stories of the Apostle Islands (stories of people and resources)
- Recreational values (provides appropriate and desirable opportunities, universal design)
- Efficiency in park operations/ sustainability (operational functionality, administrative functionality, emergency responsiveness, sustainability)

The advantages of each alternative were considered in the development of the preferred alternative. The preferred alternative gives the National Park Service the greatest overall benefits for each factor listed above for the most reasonable cost.

MANAGEMENT ZONES

Management zones apply to different areas of a park unit and describe the desired conditions for resources and visitor experiences in those different areas. Together, they identify the widest range of potential resource conditions, visitor experiences, and facilities for the park unit that fall within the scope of the park unit’s purpose, significance, and special mandates. Five potential management zones were identified for Apostle Islands National Lakeshore: frontcountry, backcountry, primitive, historic, and park operations.

In formulating the three action alternatives, the management zones were placed in different locations or configurations on a map of the park according to the overall concept of each alternative.

The five management zones applied to Apostle Islands National Lakeshore in the action alternatives are presented in table 5. Visitor experiences, resource conditions, and appropriate activities and facilities are described for each management zone.

The cultural resource treatments identified in the table and in the alternatives are defined following the table.

Table 5: Management Zones

	Frontcountry	Backcountry	Primitive	Historic	Park Operations
Zone Concept	The primary focus of this zone would be providing support services for recreation in a natural setting. These developed areas would provide for the highest density of recreation use in Apostle Islands National Lakeshore. Thus, they would have more visitors and visitor developments than other parts of the park.	This zone would emphasize the preservation of natural and cultural resources while providing for visitor enjoyment and outstanding opportunities for solitude and primitive recreation. Impacts due to recreation would be limited, substantially unnoticeable, and appropriate for wilderness.	This zone would emphasize the preservation of natural resources and offer outstanding opportunities for solitude and primitive recreation. Recreational opportunities would be primarily unstructured, with many opportunities for adventure. The areas would generally appear to have been affected primarily by the forces of nature.	Protection of cultural resources would be the focus within these areas. Education/interpretive opportunities may be plentiful in some locations in this zone.	This zone would support management and operation of the park.
Wilderness	Not applicable for wilderness	Applicable for wilderness	Applicable for wilderness	Not applicable for wilderness	Not applicable for wilderness

	Frontcountry	Backcountry	Primitive	Historic	Park Operations
Natural Resources	Natural resources would be maintained in as natural a condition as possible while allowing for some modifications to provide for visitor services and developments.	Natural systems and natural processes would function with ecological integrity. Active restoration and mitigative methods would be employed when necessary to meet this objective. Areas with sensitive natural resources would be protected and may receive a high level of management attention.	Natural systems and natural processes would function with ecological integrity. The areas generally would appear to be affected by forces of nature, with the imprint of man's work substantially unnoticeable. The application of active restoration or mitigative measures would be avoided unless ecological integrity was not expected to recover without human intervention. Areas with sensitive natural resources would be protected and may receive a high level of management attention, although there would be minimal evidence of that activity.	The natural environment may be manipulated in small areas to protect cultural resources and to provide for visitor use.	Natural resources would be modified to accommodate park operations. Natural processes may be altered (e.g., flooding and fire) to protect infrastructure and resources.
Cultural Resources¹	Cultural resources would be preserved, restored, or rehabilitated for adaptive reuse.	Cultural resources would be documented, protected, and stabilized/preserved as necessary.	Cultural resources would be documented, protected, and stabilized/preserved as necessary.	Cultural resources could be stabilized, preserved, restored, or rehabilitated for adaptive use; however, the ultimate treatment of lighthouses would be directed by the treatment recommendations of the 2011 "Cultural Landscape/ Historic Structures Plan/ Environmental Assessment."	Cultural resources would be stabilized, preserved, restored, or rehabilitated for adaptive use.

¹ See definitions of cultural resource treatments following this table.

	Frontcountry	Backcountry	Primitive	Historic	Park Operations
Cultural Resources² (continued)	<p>There would be allowances for some modifications (in harmony with historic character) of cultural landscape elements for interpretation, safety, and resource protection.</p> <p>Submerged resources would be cooperatively managed with the state of Wisconsin.</p>	<p>Within the wilderness area, treatment methods would be consistent with the preservation of wilderness character and values.</p> <p>There would be allowances for some modifications (in harmony with historic character) of cultural landscape elements for interpretation, safety, and resource protection.</p>	<p>Within the wilderness area, treatment methods would be consistent with the preservation of wilderness character and values.</p> <p>Cultural resources generally would be minimally managed.</p> <p>There would be allowances for minor modifications (in harmony with historic character) of cultural landscape elements for resource protection only.</p>	<p>Historic character of identified cultural landscapes would be protected.</p> <p>There would be allowances for some modifications (in harmony with historic character) of cultural landscape elements for interpretation, safety, and resource protection.</p>	<p>There would be allowances for some modifications (in harmony with historic character) of cultural landscape elements for interpretation, safety, and resource protection.</p>
Visitor Experience	<p>Visitors would have convenient and easy access to developed, high use, recreational and interpretive areas.</p>	<p>Visitors would enjoy outstanding opportunities to enjoy natural and cultural resources and solitude.</p>	<p>Visitors would have an opportunity to experience primitive and unconfined types of recreation in an area that generally appears to have been affected primarily by the forces of nature.</p>	<p>Visitors would have a variety of opportunities to see and learn about cultural resources. Visitor access and public safety would be a high priority, as would protecting historic properties.</p>	<p>Visitors would not normally enter the park operations zone except for park business purposes, or to seek aid or information. The area would be intended for staff and visitors on official business.</p>

² See definitions of cultural resource treatments following this table.

	Frontcountry	Backcountry	Primitive	Historic	Park Operations
Visitor Experience (continued)	High to moderate levels of visitors may be encountered in these areas near beaches, boat launches, and visitor centers. Density would begin to decrease with travel farther from these points. A range of small to large groups could be accommodated.	There would be a moderate chance of encountering others. Only small groups would generally be accommodated.	The chance of encountering others would be the lowest within this zone. Only small groups would generally be accommodated.	Moderate levels of visitors may be encountered in these areas. A range of small to large groups could be accommodated.	NA
	Recreational activities could include walking along beaches, boating, taking boat tours, kayaking, picnicking, hiking, camping, and sightseeing.	Recreational activities could include walking along beaches, picnicking, hiking, and camping.	Recreational activities could include walking along beaches, picnicking, hiking, and camping.	Recreational activities could include walking along beaches, picnicking, and hiking. No camping would occur within this zone.	N/A
	Snowmobiling and ATV use consistent with federal regulations would be permitted on most of Lake Superior waters within the park and on designated routes on the mainland, but not on the islands.	Snowmobiling and ATV use would not be permitted.	Snowmobiling and ATV use would not be permitted.	Snowmobiling and ATV use would not be permitted.	N/A
	<i>Designated Camping</i> This would be permitted with limits on group size.	<i>Designated Camping</i> Sites would be dispersed or clustered to minimize resource impacts. There would be limits on group size and limited designated sites within wilderness.	<i>Designated Camping</i> Existing developed campsites would continue to be maintained; new designated campsites might be permitted for resource protection purposes. There would be limits on group size.	<i>Designated Camping</i> This would not be permitted.	N/A

	Frontcountry	Backcountry	Primitive	Historic	Park Operations
Visitor Experience (continued)	<i>Undesignated Camping</i> This would not be permitted.	<i>Undesignated Camping</i> This would be permitted in this zone, with restricted group sizes. Frequently used undesignated sites would be evaluated for closure and rehabilitation, or for establishment of designated sites.	<i>Undesignated Camping</i> This would be permitted in this zone, with restricted group sizes. Frequently used undesignated sites would be evaluated for closure and rehabilitation, or for establishment of designated sites.	<i>Undesignated Camping</i> This would not be permitted.	N/A
	<i>Visitor Services</i> Support services would be extensive.	<i>Visitor Services</i> There would be no on-site visitor support services other than primitive trails, necessary signs, and designated developed and undeveloped campsites.	<i>Visitor Services</i> Minimal or no visitor services would be provided.	<i>Visitor Services</i> There would be a moderate level of on-site visitor support services.	N/A
	<i>Interpretive Programming</i> Roving and programmed interpretive opportunities could be provided. Waysides and signs may be located at parking lots and other transportation portals.	<i>Interpretive Programming</i> Minimal waysides may be provided in nonwilderness areas. Guided hikes may be provided. Wilderness and re-wilding would be a major interpretive focus. Interpretive activities may be permitted in the wilderness area provided they do not adversely affect the wilderness character.	<i>Interpretive Programming</i> There would be no waysides or guided hikes. Wilderness and re-wilding would be a major interpretive focus. Interpretive activities may be permitted in the wilderness area provided they do not adversely affect the wilderness character.	<i>Interpretive Programming</i> Roving and programmed interpretive opportunities could be provided. Waysides and signs could be available at entry locations to the adjoining wilderness area.	N/A
	Facilities would incorporate an unobtrusive design	There would be minimally developed	There would be very minimal development such	Facilities would incorporate an unobtrusive design,	Facilities would be intensely managed for

	Frontcountry	Backcountry	Primitive	Historic	Park Operations
Visitor Experience (continued)	and minimal footprint. Facilities would provide for basic services, access, recreation, and visitor safety. Facilities could include roads, paved and unpaved trails, boat launch areas, docks, parking lots, visitor contact stations, visitor centers, and other highly developed facilities.	facilities such as trails and designated camping areas to safely allow for visitor use.	as signs that might be necessary for visitor safety or to protect wilderness resources. There would be some designated camping areas.	sensitive to the historic scene, and a minimal footprint. Facilities would provide for basic services, access, recreation, and visitor safety. Facilities could include paved and unpaved trails, docks, boat launch areas, light houses, and other historic structures.	safety purposes and would incorporate a sustainable design sensitive to its context and with minimal footprint. Facilities may include administrative offices, roads, maintenance facilities, storage, parking lots, storage yard, waste water treatment facilities, utility management facilities, and other operational needs critical to park operation.
Development	<p>Developed campsites would include tent pads, picnic tables, fire ring, and bear locker if needed. Vault, pit, or alternative toilets would be available at all sites.</p> <p>Marked and maintained trails would be provided to a standard that allows for safe use by multiple user groups.</p>	<p>Designated campsites could include tent pads, fire ring, and bear locker if needed. Picnic tables would be permitted in nonwilderness areas. Vault, pit, or alternative toilets would be available at most sites.</p> <p>Marked and maintained trails would be provided at a rustic standard. Revisions to the trails system would be permitted for resource protection purposes.</p>	<p>Designated campsites would be limited to places where they are needed to protect resources, with minimal footprint. New campsites would not be provided except for resource protection purposes. Designated campsites could include tent pads, fire ring, bear locker, and vault, pit, or alternative toilet if needed.</p> <p>Existing trails would continue to be provided at a rustic standard. Minor revisions to the trails system would be permitted for resource protection purposes.</p>	<p>No campsites would be provided.</p> <p>Trails would be maintained and developed only to access historic or interpretive resources. Revisions to the trails system would be permitted for resource protection purposes.</p>	<p>No public campsites would be provided.</p> <p>No public trails would be present.</p>

Definitions of Cultural Resource Treatments

- **Stabilization** is an interim measure taken to structurally reinforce, weatherize, or correct unsafe conditions while retaining a historic property's present form.
- **Preservation** is the act or process of applying the measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses on ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction.
- **Rehabilitation** is the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- **Restoration** is the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by removing features from other periods in its history and replacing missing features from the restoration period.

USER CAPACITY

General management plans are required by law to address the topic of user capacity, also known as carrying capacity. The National Park Service defines user capacity as the types and extent of visitor use that can be accommodated while sustaining the quality of resources and visitor opportunities consistent with the purposes of the park. It is a process involving planning, monitoring, and management actions to ensure that a park unit's values are protected.

Managing user capacity in national parks is inherently complex and depends not only on the number of visitors, but also on where they go, what they do, and the “footprints” they leave behind. In managing for user capacity, the park staff relies on a variety of management tools and strategies, rather than solely on regulating the number of people in a park or simply establishing limits on visitor use. In addition, the ever-changing nature of visitor use in parks requires a deliberate and adaptive approach to user capacity management.

The foundations for making user capacity decisions in this *General Management Plan / Wilderness Management Plan* are the park's purpose, significance, special mandates, and management zones. These define why the park was established and identify the most important resources and values, including visitor experience opportunities, that will be protected or provided. The management zones qualitatively describe the desired resource conditions and visitor experiences, including appropriate recreation activities, for different locations throughout the park. These elements direct the National Park Service on how to protect resources while offering a diversity of visitor opportunities.

Based on the desired conditions described in the management zones, indicators and standards are identified in this plan. An indicator is a measurable variable that can be used to track changes in resource and social conditions related to human activity so that existing conditions can be compared to desired conditions. A standard is the minimum acceptable condition for an indicator. The indicators and standards help translate the broader qualitative descriptions of desired conditions in the management zones into measurable conditions. As a result, park managers can track changes in resource conditions and visitor experiences, and provide a basis for the park staff to determine whether desired conditions are being met. The monitoring component of this process also helps test the effectiveness of management actions and provides a basis for informed adaptive management of visitor use.

The *General Management Plan / Wilderness Management Plan* also includes a range of actions that would be taken to maintain or restore desired conditions. For example, management actions may include providing information about low impact recreational use and the principles of Leave No Trace; directing visitors to designated facilities or areas; adding or altering facilities (e.g., trails, campsites) for containment of use to designated areas; directing visitors to lesser-used areas or off-peak times; restricting the types of recreation activities permitted; and/or reducing the amount of visitor use in certain areas.

With limited staffs and budgets, NPS managers will focus more frequently on areas where there are likely visitor use changes and/or clear evidence of problems, or where problems can reasonably be anticipated during the life of this plan. This means

monitoring will more frequently take place where conditions are approaching or violate standards, conditions are changing rapidly, specific and important values are threatened by visitation, and/or the effects of management actions taken to address impacts are uncertain.

User capacity decision making is a continuous process; decisions are adjusted based on monitoring the indicators and standards. Management actions are taken to minimize impacts when needed. The indicators and standards included in this management plan would generally not change in the future. However, as monitoring of the park's conditions continues, managers may decide to modify, add, or eliminate indicators if better ways are found to measure important changes in resource and social conditions. Also, if new use-related resource or visitor experience concerns arise in the future, additional indicators and standards will be identified as needed to address these concerns. The results of the park's monitoring efforts, related visitor use management actions, and any changes to the park's indicators and standards would be available to the public.

In summary, this *General Management Plan / Wilderness Management Plan* addresses user capacity in the following ways:

- It outlines the park's purpose, significance, and management zones, which provide the foundation for user capacity management.
- It describes the park's most pressing use-related resource and visitor experience concerns. This helps NPS managers focus limited resources on specific issues that may need management attention now or into the future. It also helps determine the most important potential indicators and standards to consider.
- It identifies the most important indicators that will be monitored and sets standards to determine if desired conditions are not being met due to impacts from visitor use.
- It outlines representative examples of management actions that might be used to

avoid or minimize impacts from visitor use. In addition, more specific guidance on managing visitor use and related impacts in campsites and camping zones is included in appendix C given the importance of this issue to the park.

OVERVIEW OF CURRENT AND POTENTIAL USE-RELATED IMPACTS

This section discusses existing and potential use-related impacts that may occur in the park, challenging managers' abilities to manage for the desired conditions outlined in this *General Management Plan / Wilderness Management Plan*.

Existing facilities in the park generally support enjoyable visitor opportunities and protect resources, and based on projected trends will continue to function fairly well. As noted in chapter 1, designated island campsites are sometimes full on the weekends during the peak season. Visitors may not get some campsites they want when they want them, such as on Sand, York, and Oak islands. Some of the park's wilderness and nonwilderness campsites are showing signs of visitor impacts. The design and use of some campsites has led to soil compaction, the loss of vegetation, and campsite expansion. In the camping zones that do not have designated campsites on some popular islands, a few "unofficial" visitor-created campsites have been repeatedly used, resulting in impacts such as compacted soils, trampled vegetation, trash, and incidences of improper human waste disposal.

Some resource-related impacts also have occurred in localized areas on the islands and mainland. An extensive network of social trails (i.e., those created by visitors) has formed on the Stockton Island–Presque Isle tombolo, affecting the fragile dune vegetation that grows there. The vegetative cover on some popular sandscapes and beaches, such as on Cat and Ironwood islands, also has been adversely affected due to trampling by visitors.

Although there are no major crowding or use conflicts affecting visitor opportunities on the islands or the mainland, visitor crowding is a concern at some docks and parking areas at times, such as at Stockton–Presque Isle and Rocky Island, at kayak launch areas at Little Sand Bay and Meyers Beach, and at Meyers Beach in the winter when ice conditions allow access to the sea caves. Crowding and noise have been identified by a few visitors to be a concern in surveys and during the scoping effort for this plan (see the description of visitor use and experience in the “Affected Environment” section and the summary of issues in chapter 1). Some of these concerns can arise due to large group activities at attraction points.

INDICATORS AND STANDARDS

This section identifies several measurable indicators that would be monitored in Apostle Islands National Lakeshore. The indicators focus on key aspects of visitor experiences and resources, and more specifically on the most pressing use-related concerns described in the previous section. The planning team considered many potential indicators that would identify visitor use impacts of concern, but those included in table 6 are considered the most salient at this time given the park’s desired conditions and existing visitor use patterns.

After selecting indicators, standards that represent the points where visitor experience and resource conditions become unacceptable were then assigned. The standards selected for each indicator were based on best professional management judgment that was informed by the desired conditions outlined in the management zones, the park’s baseline conditions for each indicator, and relevant park-specific and national research studies.

Ten indicators and standards were selected as measures of visitor use effects at Apostle Islands National Lakeshore. Table 6 includes the indicators, standards, related monitoring,

and potential future management strategies that would be implemented as a result of this planning effort. The majority of these indicators and standards are related to camping activities on the islands. Camping is a popular activity in the park and contributes to visitors being able to achieve an island experience—a fundamental value of the park. Further, the potential for resource impacts as a result of overnight activities, especially given the significant amount of this activity in the park, can contribute to a number of concerns such as vegetation loss, soil compaction, erosion, and improper human waste disposal. These impacts can be substantial in terms of affecting natural resource conditions and processes, and also can contribute to a reduction in perceived naturalness that affects the visitor experience. An additional indicator and standard related to group activities was included since the dynamics of group use can contribute to a number of issues such as noise impacts, crowding, use conflicts, and an overload on infrastructure. Managing the size and timing of groups is important for minimizing these types of impacts.

The staff will continue general monitoring of use levels and patterns and would conduct periodic visitor surveys of visitor characteristics, expectations, and preferences. In addition, the park staff would add the user capacity indicators identified in the zone descriptions that are not already included in the current monitoring program. The rigor of monitoring the indicators (e.g., frequency of monitoring cycles, amount of geographic area monitored) may vary considerably depending on how close existing conditions are to the standards. If the existing conditions are well below the standard, the rigor of monitoring may be less than if the existing conditions are close to or trending towards the standards.

In addition, the initial phases of monitoring for the indicators and standards defined above would help the NPS staff identify if any revisions are needed. The initial testing of the indicators and standards would determine if

Table 6: User Capacity Indicators and Standards

TOPIC: Size and Condition of Designated Campsites			
Indicator	Standard	Monitoring Strategies	Management Strategies
Optimal campsite size measured in square feet for individual sites and group sites	Individual site: 1,600 square feet Group site: 5,400 square feet	<ul style="list-style-type: none"> Continue regular condition assessments on the existing campsite system using existing monitoring protocol and a rotating schedule of sites Incorporate user capacity campsite monitoring with facility condition monitoring and management activities Continue current archeological sites assessment and monitoring program 	<ul style="list-style-type: none"> Increased education on campsite regulations and Leave No Trace techniques (e.g., packing out waste) Relocation of campsites to more durable and naturally constrained areas Increased site management and maintenance (e.g., site boundary delineation) Designate use areas (e.g., tenting, cooking) Addition of visitor facilities (e.g., pit toilets, campfire rings) Avoid or minimize use of vulnerable archeological sites as campsites. See other management strategies outlined in campsite management guidelines (appendix C)
Maximum campsite size measured in square feet for individual sites and group sites	Individual site: 2,150 square feet Group site: 8,100 square feet		
Condition class (see rating system following this table) of designated campsites	No more than 10 designated campsites at condition class 4; No campsites at condition class 5; No campsites with documented vulnerable archeological sites on them at condition class 3, 4, or 5.		
Presence and percent of visible human waste sites at all designated campsites	Evidence of human waste visible at less than 25% of designated campsites; 95% of designated campsites have no more than one evident human waste site.		
TOPIC: Proliferation and Condition of Visitor Created Campsites in Camping Zones			
Indicator	Standard	Monitoring Strategies	Management Strategies
Number of visitor-created campsites in any zone	No more than two visitor-created campsites in any zone	<ul style="list-style-type: none"> Initiate monitoring of the presence and condition of visitor-created campsites using rapid assessment techniques and a rotating schedule of zones To the extent feasible, incorporate visitor-created campsite monitoring activities into other park program activities occurring in designated zones If zone camping management (see appendix C) is adjusted, monitoring protocol would also be amended 	<ul style="list-style-type: none"> Increased education on campsite zone regulations and Leave No Trace techniques Improved delineation and information on camping zone boundaries and closure areas Increased restoration of visitor-created campsites Alteration of zone camping management to a concentric circle system with established sites in high use areas (see camping zone management guidelines in appendix C)
Condition class (see rating system following this table) of visitor-created campsites in any designated camping zone	No more than one in any designated camping zone will be in condition class level 3; no sites will be above condition class level 3		
Number of visitor-created campsites in closed areas	No visitor-created campsites in closed areas		
Presence and percent of visible human waste sites at all visitor created campsites	Evidence of human waste visible at less than 25% of visitor created campsites; 95% of visitor created campsites will have no more than one evident human waste site.		

TOPIC: Evidence of Illegal Campfires			
Indicator	Standard	Monitoring Strategies	Management Strategies
Number of illegal campfire remnants per 1,000 linear feet of beach/coastline	No more than one illegal campfire remnant per 1,000 ft of beach/coastline	<ul style="list-style-type: none"> Continue monitoring of illegal campfire remnants as part of regular patrols and other park program activities If illegal campfire remnants increase in an area, target for more systematic monitoring 	<ul style="list-style-type: none"> Increased education on campfire regulations and Leave No Trace techniques Improved delineation and information on areas permitted for campfire activities Reduction of areas permitted for campfire activities Restrictions on campfire activities
TOPIC: Organized Group Management			
Indicator	Standard	Monitoring Strategies	Management Strategies
Maximum people per organized group	<p><i>Historic and Frontcountry Zones: 60 people at one time per group*</i></p> <p><i>Primitive and Backcountry Zones: 20 people at one time per group*</i></p> <p>*Except for special events (e.g., Lighthouse Celebration) and special use permits that are regulated separately</p>	<ul style="list-style-type: none"> Continue monitoring the presence and size of organized groups through on-site contacts and pre-trip coordination activities Initiate targeted on-site monitoring of the presence and size of organized groups 	<ul style="list-style-type: none"> Increased pre-trip planning information, with targeted contact for organized groups Increased education on regulations and recommendations for organized group activities Coordinate the arrival (day and time) and distribution of organized groups On-site contact with individual visitors and groups to provide information, direct use, and avoid conflicts

Condition Class Rating System:

- Class 0: Campsite barely distinguishable; no or minimal disturbance of vegetation and/or organic litter. Often an old campsite that has not seen recent use.
- Class 1: Campsite barely distinguishable; slight loss of vegetation cover and/or minimal disturbance of organic litter.
- Class 2: Campsite obvious; minor to moderate loss of vegetation cover (10%-40%) and/or organic litter crushed in primary use areas.
- Class 3: Moderate loss of vegetation cover (40%-60%) and/or organic litter crushed on much of the site, some bare soil exposed in primary use areas. Some soil erosion indicated by exposed tree roots and minor shoreline disturbance.
- Class 4: Moderate to high loss of vegetation cover (60%-90%) and/or organic litter crushed on much of the site, bare soil exposed in primary use areas. Soil erosion indicated by exposed tree roots and moderate shoreline disturbance.
- Class 5: Nearly complete or total loss of vegetation cover (90%-100%) and organic litter, bare soil widespread. Soil erosion obvious, as indicated by exposed tree roots and rocks and extensive shoreline disturbance.

the indicators are accurately measuring the conditions of concern. Park staff may decide to modify the indicators or standards and revise the monitoring program if more effective and efficient methods are found to measure changes caused by visitor use. Most of these changes should be made within the first several years of incorporating changes to current campsite monitoring. This iterative learning and refining process is the strength of this approach to managing user capacity—it can be adapted and improved as knowledge grows.

After this initial testing period of monitoring indicators and standards, adjustments should not occur unless there is a compelling reason.

Finally, if use levels and patterns change substantially, the park staff may need to initiate additional monitoring of new

indicators to ensure that desired conditions are maintained. Some of the potential future user capacity indicators may relate to the topics of crowding at high-use docks and attraction points, use conflicts on the lake, and trampling of sensitive vegetation.

The selection of any new indicators and standards for monitoring purposes, changes to the indicators and standards identified in this general management plan, or the implementation of any management actions that affect use would comply with the National Environmental Policy Act; the National Historic Preservation Act; and other laws, regulations, and policies as needed. NPS staff would also inform the public of progress and revisions to indicators and standards through regular reporting on the user capacity program.

ALTERNATIVE 1 (NO ACTION)

CONCEPT AND SUMMARY

This alternative would provide a baseline for evaluating changes and impacts in the other alternatives. In the no-action alternative, the National Park Service would continue to manage Apostle Islands National Lakeshore as it has been managed since the approval of the 1989 *General Management Plan* and the designation of the Gaylord Wilderness in 2004. For the foreseeable future there would be no major change in the management direction of the park. NPS managers would continue to strive to protect/maintain current natural and cultural resource conditions in the park, preserving light stations and providing for quality visitor experiences on the islands.

Facilities and resource programs would continue as they are, without substantial changes. The natural resource program would continue to focus on inventorying and monitoring, resource protection and restoration, research, and mitigation where appropriate. The cultural resource program also would continue to focus on surveying cultural resources; protecting historic structures and landscapes, particularly in and around the light stations; and mitigation where appropriate. The interpretive/education programs would continue to provide a variety of personal services (e.g., information and orientation at visitor centers, informal visitor contacts, guided walks and lighthouse tours, evening and educational programs) and nonpersonal services (e.g., publications like the park newspaper and site bulletins).

Natural and cultural resources would continue to be managed under existing approved plans (e.g., fire management, wildlife management). As appropriate, archeological surveys and/or monitoring

would precede any ground disturbance associated with excavation or construction, and national register-eligible or national register-listed archeological resources would be avoided to the greatest extent possible. To appropriately preserve and protect national register-listed or national register-eligible historic structures and cultural landscapes, all stabilization, preservation, and rehabilitation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995).

MANAGEMENT ZONING

In alternative A, NPS managers would continue to follow the management and zoning described in the 1989 *General Management Plan Apostle Islands National Lakeshore*, as modified by the 2004 wilderness designation. Most of the land on the islands would be managed as wilderness. Small scattered areas on the islands with cultural resources outside wilderness (e.g., light stations) would be in historic zones, and areas with visitor facilities (e.g., docks, campsites, visitor centers) would be in development zones. On the mainland most of the land would continue to be in a natural zone, with Meyers Beach and Little Sand Bay being in development zones. The Lake Superior submerged lands within the park boundary and the use and occupancy/life estates on the islands would continue to be included in special use zones.

USER CAPACITY

In this alternative NPS managers would continue managing visitors as they have in the past, relying on approved plans. The park staff

would continue to respond to user capacity issues on a case-by-case basis, with facility capacity largely setting the park's user capacity. No major new initiatives would be pursued to manage visitors, and a parkwide user capacity approach (i.e., monitoring indicators and standards) would not be established.

MANAGEMENT OF SPECIFIC AREAS

Light Stations

NPS managers would continue existing management of light stations, striving to maintain current resource preservation efforts and visitor experience opportunities to the extent possible. Except for the Raspberry Island light station, in the absence of a site-specific plan, the cultural landscapes in the immediate vicinity of the light stations would be stabilized and preserved. At the Raspberry Island light station, the cultural landscape would be restored to the degree possible, as described in the approved 2004 "Cultural Landscape Report and Environmental Assessment" (NPS 2004f).

Former Use and Occupancy/ Current Life Estate Properties

Decisions would be made on the future of life estates when the leases expire. The structures associated with expired leases would be prioritized based on their historical significance, potential for viable adaptive uses, cost, and other criteria. Based on the assigned priorities, the National Park Service would determine the level of treatment to give each resource. Structures and landscapes at the high end of the priority list would receive more attention compared to the low priority structures and landscapes. Structures that are not historically significant would be allowed to molder or be removed (particularly if they pose safety hazards), and the natural values of the sites would be restored. In the absence of a site-specific plan, no public use would be permitted in the interior of the structures. (Some of the grounds of these properties would be open to public use.) The public use

of associated docks would be decided on a case-by-case basis.

Other Nonwilderness Areas on the Islands

NPS managers would continue existing management priorities, striving to maintain current natural and cultural resource conditions and visitor experience opportunities to the extent possible. In the absence of a site-specific plan there would be no significant changes in visitor uses or facilities, including docks and campsites, and the Stockton Island Visitor Center.

In this alternative park managers would continue to strive to preserve and stabilize the Manitou fish camp. Efforts would continue to partially rehabilitate the cultural landscape. Personal and nonpersonal interpretation (self-guided brochures) would be provided for visitors.

Wilderness Area

NPS managers would continue existing management priorities, striving to maintain current natural and cultural resource conditions and visitor experience opportunities to the extent possible. In the absence of a site-specific plan there would be no significant changes in visitor uses or facilities. There would continue to be a mixture of designated campsites and zoned (undesignated) camping. The group campsite on the sandspit at Oak Island would continue to be maintained. No new campsites would be provided under this alternative.

Mainland Unit

The park staff would continue existing management priorities, striving to maintain current natural and cultural resource conditions and visitor experience opportunities to the extent possible. In the absence of a site-specific plan there would be no significant changes in visitor uses or facilities. Meyers Beach and Little Sand Bay would continue to be managed as they currently are. The presence of NPS staff at

Meyers Beach would continue to be seasonal and subject to weather conditions.

Mainland NPS Visitor Centers

NPS managers would continue current operations, using the old Bayfield County Courthouse and Little Sand Bay Visitor Center to the extent possible. The Bayfield Visitor Center would continue to operate at reduced hours during the winter, while the Little Sand Bay Visitor Center would be closed during the winter. If at some point the Little Sand Bay Visitor Center becomes unusable, site-specific planning would be done to determine what action should occur, taking into consideration the historic Hokenson fishery.

The National Park Service would continue its commitment to the cooperative operation of the Northern Great Lakes Visitor Center.

NPS Operational (Administrative) Facilities

The park headquarters would remain at the old courthouse building in Bayfield. Park managers would continue to lease a waterfront facility for operational facilities (e.g., shops, marina support facilities, storage space, docks), and would continue to maintain operational facilities at Little Sand Bay.

ESTIMATED COSTS

Cost estimates for alternative 1 are identified below. The cost estimates, in 2008 dollars, shown here are not for budgetary purposes;

they are only intended to show a very general *relative* comparison of costs between the alternatives. A discussion of the development of the costs and a comparison between the alternatives is included after the description of the alternatives.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future. Costs have been broken down into two categories—annual operating costs and one-time costs.

Annual costs include the costs associated with ongoing maintenance, utilities, staffing, supplies and materials, and any leasing costs. One-time costs include new construction, the cost of removal or divestiture of resources, the cost of restoration of resources, the cost of rehabilitation, and any cost of additions to structures.

Annual Costs

As of 2008, the park's staff consisted of the equivalent of 36 permanent employees. This approximate staffing level would continue in alternative 1. The park's annual operating budget (FY 2008) was \$ 2.9 million.

One-time Costs

Alternative 1 would continue the current level of facilities with no additional development or changes to facilities.

ALTERNATIVE 2 (NPS PREFERRED ALTERNATIVE)

CONCEPT AND SUMMARY

Alternative 2 would focus on providing opportunities for more people to have an island experience, encouraging additional transportation opportunities for visitors to reach some of the inner islands who don't have their own boats or the skills to deal with challenging Lake Superior conditions. Two light stations (in addition to the already restored Raspberry light) would be restored or rehabilitated under this alternative for cultural resource preservation and interpretive/educational purposes. Additional opportunities, such as day use areas, also would be provided for visitors on some nonwilderness areas on the inner islands. The visitor experience on the other nonwilderness island areas would largely stay as it is, with the possible exception of additional opportunities to experience selected light stations. The wilderness area generally would continue to be managed as it has been, as mandated under the Wilderness Act, Director's Order 41, and Reference Manual 41 (see also the desired conditions and strategies for wilderness in table 1 and chapter 2).

The visitor experience on the mainland unit would remain largely the same with the addition of a greater NPS presence at Meyers Beach. A new Bayfield Visitor Center would be located closer to the water in Bayfield to increase contact with visitors and assist people in getting out to the islands. A new NPS operations facility would be colocated with the new visitor facility to increase efficiency. The park headquarters would remain in the old courthouse building in Bayfield. The Little Sand Bay Visitor Center would be replaced with a smaller structure that offers the same level of visitor services as today but has less office space.

As in all of the alternatives, NPS managers would continue to protect/maintain natural and cultural resource conditions in park. Natural and cultural resource management would primarily concentrate on long-term monitoring, research, restoration, and mitigation where appropriate. The interpretive/education programs would continue to provide a variety of personal services (e.g., information and orientation at visitor centers, informal visitor contacts, guided walks and lighthouse tours, evening and educational programs) and nonpersonal services (e.g., publications like the park newspaper and site bulletins).

MANAGEMENT ZONING

Under alternative 2, the potential management zones described in table 5 would be applied to the park as presented in the map of alternative 2 (see figure 4). Most of the islands would either be in the primitive or backcountry zone, while most of the mainland unit would be in the backcountry zone. Trails in wilderness on Oak, Raspberry, Otter, Rocky, Devils, and Stockton islands would be managed as backcountry zones, while the remainder of the wilderness area would be in the primitive zone. In nonwilderness areas, popular use areas such as Meyers Beach and Little Sand Bay, the Stockton Island Visitor Center and campground, and areas with docks would be in the frontcountry zone. All of the Lake Superior water within the park boundary also would be included in the frontcountry zone.

The light stations and many other cultural resources and landscapes, such as some farmsteads, quarries, fish camps, and logging camps, would be in the historic zone. (The boundaries of the zones around the light

stations include the maximum historic clearings. However, the size of these areas could be modified based on the recommendations in future cultural landscape reports.) The use and occupancy/ life lease properties on Sand and Rocky islands also would be in the historic zone, reflecting how the areas would be managed when they come under NPS management. However, until that time the National Park Service would continue to respect the valid rights of the lessees and take no actions in these areas. Several small park operations zones also would be scattered among the islands, primarily covering administrative cabins.

Table 7: Management Zones in Alternative 2

Management Zones	Acres	%
Park Operations	35	0.05
Historic	324	0.4
Frontcountry	27,714	40
Backcountry	8,216	12
Primitive	33,084	48

USER CAPACITY

As described in the management zones and in the beginning of this chapter, park staff would monitor social and resource indicators, evaluate current conditions against standards, and take appropriate steps to ensure that the park’s user capacity is not exceeded. See table 6 for the user indicators, standards, and management and monitoring strategies that would be followed under this alternative.

MANAGEMENT OF SPECIFIC AREAS

Light Stations

Under alternative 2, two or more light stations (choosing from Sand, Outer, or Michigan Island) could be restored or rehabilitated for cultural resource preservation and interpretive opportunities, similar to what was done for the Raspberry Island light. Criteria for choosing the light stations would include ease of transporting visitors, level of visitor interest, operational costs, financial feasibility of additional transportation opportunities, and recommendations of the 2011 “Cultural Landscape/Historic Structures Plan/Environmental Assessment.” Restoration work would include both interior and exterior elements of the light stations. The cultural landscapes for the restored light stations would be partially or fully rehabilitated.

Due to a failed roof prior to NPS ownership, the Long Island light station triplex has severe environmental and safety degradation that may not be feasible to repair, and is the subject of an ongoing “Historic Structure Report/Cultural Landscape Report and Environmental Assessment.” If feasible and cost effective, it may be rehabilitated for NPS staff housing to increase resource protection and provide some limited visitor information. If not feasible or cost effective, its future will be decided by the “Historic Structure Report/Cultural Landscape Report and Environmental Assessment,” with public involvement.

At the Raspberry Island light station, the cultural landscape would be restored to the degree possible, as described in the approved “Raspberry Island Light Station Cultural Landscape Report and Environmental Assessment” (NPS 2004f). This restoration work would address historic patterns of circulation, pathways, and outbuildings.

For the remaining light stations additional efforts would be focused on preserving the exteriors of the structures compared to alternative 1. The cultural landscapes in the

immediate vicinity of the light stations would be stabilized and preserved. Vegetation encroaching on the light station clearings would be removed. If there were no other options available to ensure the long-term preservation of a light station, and if it is economically feasible, a light station might be adaptively reused for overnight public lodging in order to offset the cost of protecting the resource. However, the National Park Service would only consider this option if the private sector would pay the entire cost of the conversion, and if public access to the light station is maintained. Further environmental documentation would be required, and the public would be engaged in this effort.

Former Use and Occupancy/ Current Life Estate Properties

If during the life of the plan the former use and occupancy/current life estate property leases expire, the park staff would evaluate these properties for potential inclusion in the National Register of Historic Places, including determinations of which buildings would be considered contributing structures, i.e., structures that contribute to the significance of a national register property. The buildings would also be evaluated for safety and utility to the National Park Service for park operations. Structures that are not listed in or eligible to be listed in the national register and are either unsafe or do not have utility for park operations would be removed and the areas restored, or in some cases allowed to molder to natural conditions.

The following actions would be taken for the Rocky Island properties, West Bay Club, Shaw Point properties, and the Hansen farm.

- If the Rocky Island properties were to come under NPS management during the life of the plan, the contributing structures on the National Register of Historic Places would be preserved and the area would be interpreted using nonpersonal services (e.g., waysides, brochures). One or more of the docks may be rehabilitated if needed and opened for public day use, provided safety and resource conditions can be met and adequate visitor facilities (i.e., toilets) provided.
- If the West Bay Club on Sand Island was to come under NPS management during the life of the plan, park managers would preserve the West Bay Club and interpret the historic story using nonpersonal interpretation (e.g., waysides). The historic road between the West Bay Club and East Bay would be reestablished as a trail, provided it can be built in an environmentally sound manner. The dock would be rehabilitated, if necessary, so it would be available for public overnight use. If economically feasible, the club would be adaptively reused (which may require rehabilitation or restoration) to permit some public overnight use of the structure. (If it is not economically feasible, overnight designated camping would be permitted near West Bay; the dock would be available for public overnight use.)
- If the Shaw Point properties on Sand Island were to come under NPS management during the life of the plan, the contributing structures would be preserved and park staff would interpret the historic story using a combination of personal and nonpersonal techniques. The historic road between Shaw Point and East Bay would be reestablished as a trail, provided it can be built in an environmentally sound manner. One or more deeper water docks would be rehabilitated, if necessary, and be available for public overnight use. If economically feasible, some of the Camp Stella structures would be adaptively reused (which may require rehabilitation or restoration) for some overnight public use. (If it were not economically feasible, the structures would be stabilized but not adaptively reused for overnight use.)
- The Hansen farm contributing structures on Sand Island would be stabilized and preserved. The cultural landscape also would be partially restored. Personal and nonpersonal interpretation would be provided to educate visitors about the

Hansens, the farm, and the farm's ties to the rest of island and the wider region. A new trail would connect the farm to the island trail network and provide access to the shoreline.

Other Nonwilderness Areas on the Islands

If feasible, new opportunities (for example, boat shuttles) would be sought to provide inexpensive transportation to selected islands, such as Basswood and Sand islands. To support these visitors, a small amount of new infrastructure would be provided on these islands, creating a few day use areas that could accommodate small or large groups. This infrastructure would include such facilities as restrooms and picnic tables. An area for day use that can accommodate large groups would be designed and constructed.

Under alternative 2, some of the trails on Sand Island could be upgraded so they are accessible to all visitors. The lack of topography on the island makes it well suited for such trails.

NPS managers would provide more convenient opportunities for boaters who depend on docks to experience the islands under a greater variety of weather and lake conditions by relocating, improving, or expanding or doing minor relocations of some existing public docks such as those at Sand and Basswood islands. The Michigan Island dock, in addition, would be improved to address access and natural resource concerns. There would be no change in the number of public docks.

There also could be an increase in the number of individual designated campsites and group campsites on Sand, Oak, and Basswood, with increased access, subject to resource management criteria (e.g., resource sensitivity of sites), interest/demand for new campsites, and other appropriate criteria. New campsites may be added on other islands, but there would be no net increase in the total number of campsites parkwide.

An Ojibwe cultural demonstration site would be designated on Basswood Island in this alternative. The demonstration site would be intended to educate visitors about the tribes' culture and their relationship to the Apostle Islands and the park. NPS staff would work with the tribes on the details in creating the site, including exhibits, interpretive materials, and staffing.

On nonwilderness areas in the outer islands there would be no net gain in the number of designated campsites. To partially address significant resource concerns, about two-thirds of the existing Stockton Island – Presque Isle campground sites would be relocated to new shoreline sites on Presque Isle, with four to six of the northernmost campsites staying where they currently are. The new campsites on Presque Isle would be designed to have the same or better amenities than the sites they are replacing, and would be located no farther from the dock than the existing campsites. Many would be shoreline sites with views as good as the campsites they are replacing. At least one of the new campsites would be designed to be universally accessible. The Stockton Island Visitor Center would remain.

The intent for the Manitou fish camp under this alternative would be the same as under alternative 1. Park managers would strive to stabilize and preserve the original site. The cultural landscape would be partially rehabilitated. Personal and nonpersonal interpretation (e.g., self-guided brochures) would be provided for visitors.

Wilderness Area

The wilderness area generally would continue to be managed as it is now. The desired conditions in table 1 in chapter 1 and the general guidance in chapter 2 would be applied. There would be no net gain in the number of designated individual campsites and trail miles, although campsites may be reconfigured and/or relocated and trails may be rerouted to protect resources and wilderness character.

In this alternative the Oak Island group campsite (the only group campsite in wilderness) would be relocated to an area near the dock and the wilderness campsite would be restored.

Mainland Unit

The mainland unit would continue to be managed as it has been. The park staff would continue striving to maintain current natural and cultural resource conditions and visitor experience opportunities to the extent possible. A ramp would be installed at Meyers Beach, which would provide access to the beach for visitors with disabilities. The Lakeshore Trail would continue to be maintained only between Meyers Beach and the mainland campsite. A day use area for large groups would be developed in the Little Sand Bay area to provide a space for park staff to provide programs for educational groups. (No area is now available for this activity.) A small loop trail would be developed at Little Sand Bay.

Mainland NPS Visitor Centers

The Bayfield Visitor Center would move to a new central location on or close to the waterfront, preferably in Bayfield, to increase contact with visitors and assist people in getting out to the islands.

The existing structure at Little Sand Bay that houses both the visitor center and employee offices would be replaced with a smaller one that offers the same level of visitor service, but has less office space. The Hokenson house might be able to serve as the new visitor center. But whatever option is selected as the visitor center, the historic integrity of the Hokenson fishery would be preserved. An appropriate permanent display site would be constructed for interpretation and preservation of the historic fishing boat, *Twilite*.

The National Park Service would continue its commitment to the cooperative operation of the Northern Great Lakes Visitor Center.

NPS Operational (Administrative) Facilities

The park headquarters would remain at its present location in the Old Bayfield County Courthouse, which would be renovated for additional office space and limited public access.

At the expiration of the current lease, the park's operational center at Roys Point (including shops, docks, and storage space) would be consolidated with a new visitor center on or near the waterfront, preferably in Bayfield, although some basic shops and storage facilities would remain at Little Sand Bay.

At Little Sand Bay three trailer pads would be added to the three existing trailer pads to provide more space for NPS seasonal employees and volunteers. The two nonhistoric seasonal staff houses at Little Sand Bay would continue to be maintained. Some administrative offices now in the Little Sand Bay Visitor Center also would be moved to either park headquarters or the new visitor center in Bayfield, although some minimal shops and storage facilities would remain at Little Sand Bay if they can be shown to enhance the sustainability of park operations in the western portion of the park.

A new ranger station would be developed at Meyers Beach to provide visitor services (e.g., orientation, law enforcement, permits, interpretation) in this portion of the park.

As noted earlier, if it is feasible and cost-effective, park housing would be provided on the triplex on Long Island. If it proves to be either infeasible or cost-prohibitive, then other options would be considered to provide an NPS presence on the island.

ESTIMATED COSTS

Cost estimates for alternative 2 are identified below. The cost estimates, in 2008 dollars, shown here are not for budgetary purposes; they are intended to only show a very general

relative cost comparison among the alternatives. The actual costs to the federal government could vary depending on various factors such as the final design of each facility, opportunities for partnerships, and future economic conditions. Note that these costs do not include the costs for any additional plans or studies. A discussion of the development of the costs and a comparison between the alternatives is included after the description of the alternatives.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Costs have been broken down into two categories: annual costs and one-time costs. Annual costs include the costs associated with ongoing maintenance, utilities, staffing, supplies and materials, and any leasing costs. One-time costs include new construction, the cost of removal or divestiture of resources, the cost of restoration of resources, the cost of

rehabilitation, and any cost of additions to structures.

Annual Costs

This alternative would be implemented with the current staffing levels plus seven full-time-equivalent staff (FTEs) for resource management, resource protection, and interpretation. (One FTE is one person working 40 hours per week for one year, or the equivalent.) The park's operating budget would need to be increased by approximately \$700,000. The total cost to operate the park in this alternative would be \$3.6 million per year (in 2008 dollars).

One-time Costs

Alternative 2 would consist of the development and improvements to facilities and structures described in this alternative. The estimated development costs in 2008 dollars—for light station restoration/rehabilitation, historic structures preservation/stabilization, and visitor and administrative facilities—would be approximately \$27.7 million.



Management Zones

- Park Operations
- Historic
- Frontcountry
- Backcountry
- Primitive

(Symbols designate smaller zones)

- Park Operations
- Historic

- Bayfield
- Indian Reservation
- Lands Outside of the Park

- Existing Trail
- Proposed Trail
(When life estates are extinguished or expire)
- Lighthouse
- Dock

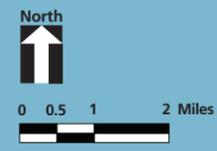
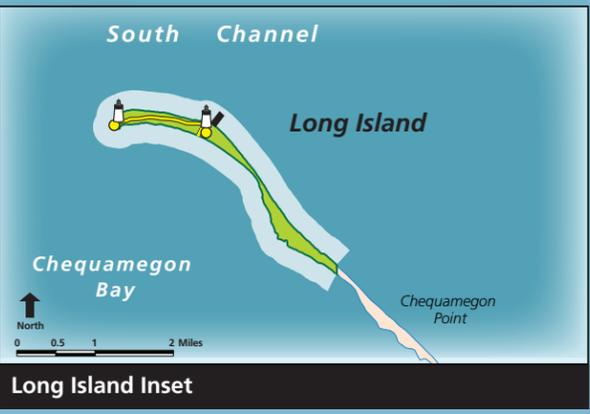


FIGURE 4
Preliminary Management Zones
Alternative 2
Preferred Alternative
Apostle Islands National Lakeshore

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 DSC • 633 • 20080 • June 2009

ALTERNATIVE 3

CONCEPT AND SUMMARY

Alternative 3 would focus on providing primitive, lake-oriented recreation/education opportunities unique to the Apostle Islands. The wilderness area would continue to be managed largely as it is now, as mandated under the Wilderness Act, Director's Order 41, and Reference Manual 41 (see also the desired conditions and strategies for wilderness in table 1 and chapter 2). In the nonwilderness area new or different education/interpretive opportunities would be provided. Interpretive opportunities at the light stations would focus on the Raspberry light station, although important resources at all the light stations would be preserved. Mainland recreation opportunities would focus on lake-oriented activities. The park headquarters would remain in the old courthouse building in Bayfield. The Bayfield Visitor Center would be expanded in the old courthouse building and serve as the park's primary visitor contact facility. The Little Sand Bay Visitor Center would be replaced with an informational kiosk. A new ranger station would be built at Meyers Beach on the mainland. A new park operational facility would be built at a location to be determined.

Like the previous alternatives, in alternative 3 NPS managers would continue to strive to protect/maintain current natural and cultural resource conditions in the park. Natural and cultural resource management would primarily focus on long-term monitoring, research, restoration, and mitigative efforts where appropriate. The interpretive/education programs would continue to provide a variety of personal services (e.g., information and orientation at visitor centers, informal visitor contacts, guided walks and lighthouse tours, evening and educational programs) and nonpersonal services (e.g.,

publications like the park newspaper and site bulletins).

MANAGEMENT ZONING

Under alternative 3, the potential management zones described in table 5 would be applied to the park as presented in the map of alternative 3 (see figure 5). Most of the islands would be in the primitive zone, while most of the mainland unit would be in the backcountry zone. In nonwilderness areas, popular use areas such as Meyers Beach and Little Sand Bay, the Stockton Island Visitor Center and campground, and areas with docks would be in the frontcountry zone. All of the Lake Superior water within the park boundary also would be included in the frontcountry zone.

The light stations and many other cultural resource sites and landscapes, such as some farmsteads, quarries, fish camps, and logging camps, would be in the historic zone. (The boundaries of the zones around the light stations include the maximum historic clearings. However, the size of these areas could be modified based on the recommendations in future cultural landscape reports.) The use and occupancy/life lease properties on Sand and Rocky islands also would be in the historic zone, reflecting how the areas would be managed when they come under NPS management. However, until that time the National Park Service would continue to respect the valid rights of the lessees and take no actions in these areas. Several small park operations zones also would be scattered among the islands, primarily covering administrative cabins.

Table 8: Management Zones in Alternative 3

Management Zones	Acres	%
Park Operations	35	0.05
Historic	303	0.4
Frontcountry	27,645	40
Backcountry	3,360	5
Primitive	38,030	55

USER CAPACITY

As described in the management zones and in the beginning of this chapter, park staff would monitor social and resource indicators, evaluate current conditions against standards, and take appropriate steps to ensure that the park's user capacity is not exceeded. See table 6 for the user indicators, standards, and management and monitoring strategies that would be followed under this alternative.

MANAGEMENT OF SPECIFIC AREAS

Light Stations

Park managers would focus on maintaining the Raspberry Island light station both for cultural resource protection and for visitor use. Visitor experience opportunities would continue or expand there. The cultural landscape would be restored to the degree possible, as described in the approved *Raspberry Island Light Station Cultural Landscape Report and Environmental Assessment* (NPS 2004f). This restoration work would address historic patterns of circulation, pathways, and outbuildings.

At the remaining light stations, NPS managers would focus preservation efforts on the exterior elements of the lighthouses. Except for Raspberry Island, no rehabilitation work would occur on the interiors of the light stations—only stabilization and preservation.

The cultural landscapes in the immediate vicinity of the light stations would be stabilized and preserved. Vegetation encroaching on the light station clearings would be removed. Unstaffed interpretive experiences would be provided at these light stations—the emphasis would be more on self-discovery and interpretation through waysides.

Due to a failed roof prior to NPS ownership, the Long Island light station triplex has severe environmental and safety degradation that may not be feasible to repair, and is the subject of an ongoing “Historic Structure Report/Cultural Landscape Report and Environmental Assessment.” If feasible and cost effective, it may be rehabilitated for NPS staff housing to increase resource protection and provide some limited visitor information. If not feasible or cost effective, its future will be decided by the “Historic Structure Report/Cultural Landscape Report and Environmental Assessment,” with public involvement.

Former Use and Occupancy/ Current Life Estate Properties

If, during the life of the plan, the former use and occupancy/current life estate property leases expire, the park staff would evaluate these properties for potential inclusion in the National Register of Historic Places, including determinations of which buildings would be considered contributing structures, i.e., structures that contribute to the significance of a national register property. The buildings would also be evaluated for safety and utility to the National Park Service for park operations. Structures that are not listed in or eligible to be listed in the national register, and are either unsafe or do not have utility for park operations would be removed and the areas restored, or in some cases allowed to molder.

The following actions would be taken for the Rocky Island properties, West Bay Club, Shaw Point properties, and the Hansen farm.

- If the Rocky Island properties were to come under NPS management during the

life of the plan, the contributing structures in the National Register of Historic Places would be preserved but no interpretation of the historic story of the area would be provided. If safety and resource conditions can be met and adequate visitor facilities (i.e., toilets) provided, one or more of the docks may be rehabilitated if necessary and opened for public day use. If the West Bay Club on Sand Island were to come under NPS management during the life of the plan, it would be preserved and the historic story of the area would be interpreted using a combination of nonpersonal techniques (e.g., waysides). The dock would be rehabilitated, if necessary, and made available for public day use.

- If the Shaw Point properties on Sand Island were to come under NPS management during the life of the plan, contributing structures on the National Register of Historic Places would be preserved and the historic story of the area would be interpreted using nonpersonal techniques. One or more deeper water docks would be rehabilitated if necessary and be available for public day use.
- The Hansen farm contributing structures on Sand Island would be stabilized and preserved. The cultural landscape also would be partially restored. A trail would connect the farm with the island trail network and provide access from the shoreline. Nonpersonal interpretation (e.g., brochures, waysides) would be provided to educate visitors about the area's history.

Other Nonwilderness Areas on the Islands

In this alternative, NPS managers would provide new or different education/interpretive opportunities for visitors—the focus of the education/interpretive program would broaden to reflect different park stories, such as the stories of American Indians, farmsteads, quarries, logging camps,

and the rewilding of the islands. New self-guided interpretive trails and/or an Ojibwe cultural demonstration site might be provided under this alternative.

With regard to other visitor facilities, no changes would occur in this alternative in the number and location of public docks in the nonwilderness area. However, the Michigan Island dock would be improved to address access and natural resource concerns. There would be no net gain in individual designated campsites, although some campsites could be moved or reconfigured to satisfy resource management criteria. There could be an increase in the number of group campsites on Sand and Basswood islands and/or the nonwilderness portions of Oak Island, subject to resource management criteria (e.g., resource sensitivity of sites), interest/demand for new campsites, and other appropriate criteria. The Stockton Island – Presque Isle campground on the tombolo would be relocated to Presque Isle to address resource concerns (e.g., bank erosion and potential visitor conflicts with bears). At least one of the new campsites would be designed to be universally accessible. The Stockton Island Visitor Center would be retained.

Park managers would strive to stabilize and preserve the original Manitou fish camp site. The cultural landscape would be partially rehabilitated. Although no interpretive staff would be present, more nonpersonal interpretation would be provided for visitors than presently exists.

Wilderness Area

The wilderness area generally would continue to be managed as it is now. The desired conditions in table 1 in chapter 1 and the general guidance in chapter 2 would be applied. There would be no net gain in the number of designated individual campsites and trail miles, although campsites might be reconfigured and/or relocated, and trails might be rerouted to protect resources and wilderness character. The Oak Island group campsite (the only group campsite in

wilderness) would be removed under this alternative and the site restored.

Mainland Unit

In alternative 3, park managers would focus on providing recreation and interpretive/educational opportunities in the mainland unit that can only be found in the park and not elsewhere in the region. The opportunities would be lake oriented and nature based, emphasizing primitive recreation. Examples of such opportunities could include building a short trail loop out of Little Sand Bay, providing water trails and water-access campsites, and providing more interpretation of the Hokenson Brothers fishery, the history of the Great Lakes fishery, and the history of American Indian presence in the area. A new 2.5-mile trail also would be built from Little Sand Bay to the east side of the Sand River, providing a coastal hiking opportunity in this part of the park. This trail proposal would require coordination with the Town of Russell to cross their lands.

Mainland NPS Visitor Centers

Under this alternative visitor contact would primarily occur in Bayfield. The existing Bayfield Visitor Center would be expanded and improved at its current location (old courthouse) to increase interpretive efforts.

The deteriorating Little Sand Bay Visitor Center would be removed and replaced with an unstaffed or occasionally staffed kiosk that provides limited orientation and interpretation functions through waysides and personal services. Planning for the new facility would take into consideration preservation of the historic Hokenson fishery.

The National Park Service would continue its commitment to the cooperative operation of the Northern Great Lakes Visitor Center.

NPS Operational (Administrative) Facilities

In this alternative the park headquarters would remain at the courthouse with the

expanded visitor center. Some administrative offices now at Little Sand Bay would be moved to the courthouse.

A ranger station would be developed at Meyers Beach to provide visitor services (e.g., orientation, law enforcement, permits, interpretation) in this portion of the park.

At the expiration of the current lease, the park's operations center (including shops, docks, and storage space) would be moved to a new location, to be determined.

Two nonhistoric seasonal staff houses would be removed at Little Sand Bay. The three existing trailer pads at Little Sand Bay would be maintained, and three new trailer pads would be added for NPS employees and volunteers. New seasonal staff apartments (studio or one-bedroom units) would be built at the NPS operational center area.

As noted earlier, if it is feasible and cost-effective, park housing would be provided on the triplex on Long Island. If it proves to be either infeasible or cost-prohibitive, then other options would be considered to provide an NPS presence on the island.

ESTIMATED COSTS

Cost estimates for alternative 3 are identified below. The cost estimates, in 2008 dollars, shown here are not for budgetary purposes; they are intended to only show a very general *relative* cost comparison among the alternatives. The actual costs to the federal government could vary depending on various factors such as the final design of each facility, opportunities for partnerships, and future economic conditions. Note that these costs do not include the costs for any additional plans or studies. A discussion of the development of the costs and a comparison between the alternatives is included after the description of the alternatives.

The implementation of the approved plan will depend on future funding. The approval of

this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Costs have been broken down into two categories: annual costs and one-time costs.

Annual costs include the costs associated with ongoing maintenance, utilities, staffing, supplies and materials, and any leasing costs.

One-time costs include new construction, the cost of removal or divestiture of resources, the cost of restoration of resources, the cost of rehabilitation, and any cost of additions to structures.

Annual Costs

This alternative would be implemented with the current staffing levels plus five full-time-

equivalent staff (FTEs) for resource management, resource protection, and interpretation. (One FTE is one person working 40 hours per week for one year, or the equivalent.) The park's operating budget would need to be increased by approximately \$500,000. The total cost to operate the park in this alternative would be \$3.4 million per year (in 2008 dollars).

One-time Costs

Alternative 3 would consist of the development and improvements to facilities and structures described in this alternative. The estimated development costs in 2008 dollars—for light station restoration/rehabilitation, historic structures preservation/stabilization, and visitor and administrative facilities—would be approximately \$16.6 million.



Management Zones

- Park Operations
- Historic
- Frontcountry
- Backcountry
- Primitive

(Symbols designate smaller zones)

- Park Operations
- Historic

- Bayfield
- Indian Reservation
- Lands Outside of the Park

- Existing Trail
- Proposed Trail
- Lighthouse Lighthouse
- Dock Dock

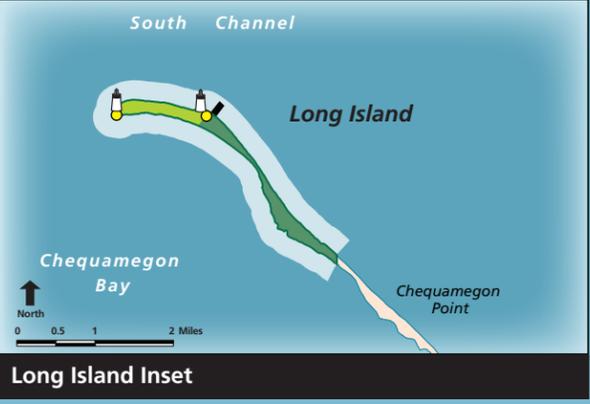


FIGURE 5
Preliminary Management Zones
Alternative 3
Apostle Islands National Lakeshore

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ALTERNATIVE 4

CONCEPT AND SUMMARY

Under alternative 4 the emphasis would be on providing a greater variety of structured recreation opportunities for visitors, compared to the present, especially on the mainland. More visitor facilities would be provided in island nonwilderness areas, including the potential for more or improved public docks. Interpretive opportunities at the light stations would focus on Raspberry Island light station, although staffed interpretive opportunities would continue to be provided at some other light stations. The wilderness area would continue to be managed largely as it is now, as mandated under the Wilderness Act, Director's Order 41, and Reference Manual 41 (see also the desired conditions and strategies for wilderness in table 1, and chapter 2).

Mainland visitor opportunities, such as hiking, camping, and interpretation, would be expanded. The park headquarters would remain at the old courthouse, and a new visitor center would be built closer to the water in Bayfield. The Little Sand Bay Visitor Center would be replaced with a new visitor contact station with improved services. A new ranger/visitor contact station would be built at Meyers Beach, and a new park operational facility would be built at a location to be determined.

As in all of the alternatives, NPS managers would continue to strive to protect/maintain current natural and cultural resource conditions in the park. Managers would continue to preserve and protect natural and cultural resources through long-term monitoring, research, restoration, and mitigation where appropriate. The interpretive/education programs would continue to provide a variety of personal

services (e.g., information and orientation at visitor centers, informal visitor contacts, guided walks and lighthouse tours, evening and educational programs) and nonpersonal services (e.g., publications like the park newspaper and site bulletins).

MANAGEMENT ZONING

Under alternative 4, the potential management zones described in table 5 would be applied to the park as presented in the map of alternative 4 (see figure 6). Most of the islands would be in the primitive zone, while most of Sand and Basswood islands and the mainland unit would be in the backcountry zone. In nonwilderness areas, popular use areas such as Meyers Beach and Little Sand Bay, the Stockton Island Visitor Center and campground, and areas with docks would be in the frontcountry zone. All of the Lake Superior water within the park boundary also would be included in the frontcountry zone.

The light stations and many other cultural resource sites and landscapes, such as some farmsteads, quarries, fish camps, and logging camps, would be in the historic zone. (The boundaries of the zones around the light stations include the maximum historic clearings. However, the size of these areas could be modified based on the recommendations in future cultural landscape reports.) The use and occupancy/life lease properties on Sand and Rocky islands also would be in the historic zone, reflecting how the areas would be managed when they come under NPS management. However, until that time the National Park Service would continue to respect the valid rights of the lessees and take no actions in these areas. Several small park operations zones also

would be scattered among the islands, primarily covering administrative cabins.

Table 9: Management Zones in Alternative 4

Management Zones	Acres	%
Park Operations	21	0.03
Historic	317	0.4
Frontcountry	27,727	40
Backcountry	8,216	12
Primitive	33,091	48

USER CAPACITY

As described in the management zones and in the beginning of this chapter, park staff would monitor social and resource indicators, evaluate current conditions against standards, and take appropriate steps to ensure that the park’s user capacity is not exceeded. See table 6 for the user indicators, standards, and management and monitoring strategies that would be followed under this alternative.

MANAGEMENT OF SPECIFIC AREAS

Light Stations

In alternative 4, as in alternative 3, park managers would focus on maintaining the Raspberry Island light station both for cultural resource protection and for visitor use. Visitor experience opportunities would continue or expand there. The cultural landscape would be restored to the degree possible, as described in the approved “Raspberry Island Light Station Cultural Landscape Report and Environmental Assessment” (NPS 2004f). This would include historic patterns of circulation, pathways, and outbuildings.

At the remaining light stations, NPS managers would focus preservation efforts on the exterior elements of the lighthouses. Except for Raspberry Island, no rehabilitation work would occur on the interiors of the light stations—only stabilization and preservation. The cultural landscapes in the immediate vicinity of the light stations would be stabilized and preserved. Vegetation encroaching on the light station clearings would be removed. Staffed interpretive experiences would be provided at some light stations, while unstaffed interpretive experiences would be provided at the other light stations.

Due to a failed roof prior to NPS ownership, the Long Island light station triplex has severe environmental and safety degradation that may not be feasible to repair, and is the subject of an ongoing “Historic Structure Report/Cultural Landscape Report and Environmental Assessment.” If feasible and cost effective, it may be rehabilitated for NPS staff housing to increase resource protection and provide some limited visitor information. If not feasible or cost effective, its future will be decided by the “Historic Structure Report/Cultural Landscape Report and Environmental Assessment,” with public involvement.

**Former Use and Occupancy/
Current Life Estate Properties**

If during the life of the plan, the former use and occupancy/current life estate property leases expire, the park staff would evaluate these properties for potential inclusion in the National Register of Historic Places, including determinations of which buildings would be considered contributing structures, i.e., structures that contribute to the significance of a national register property. The buildings would also be evaluated for safety and utility to the National Park Service for park operations. Structures that are not listed in or eligible to be listed in the national register, and are either unsafe or do not have utility for park operations, would be removed and the

areas restored, or in some cases allowed to molder.

The following actions would be taken for the Rocky Island properties, West Bay Club, Shaw Point properties, and the Hansen farm.

- If the Rocky Island properties were to come under NPS management during the life of the plan, the contributing structures on the National Register of Historic Places would be preserved and the historic story of the area would be interpreted using a combination of personal and nonpersonal techniques (e.g., waysides, trails). If safety and resource conditions can be met and adequate visitor facilities (i.e., toilets) provided, one or more of the docks may be rehabilitated (if necessary) and opened for public day use.
- If the West Bay Club on Sand Island were to come under NPS management during the life of the plan, it would be preserved and the historic story of the area would be interpreted using a combination of personal and nonpersonal techniques (e.g., waysides). The dock would be rehabilitated, if necessary, and made available for public overnight use. Although the club would not be available for public overnight use in this alternative, camping would be permitted in designated sites in the West Bay area. The historic road between the club and East Bay would be reestablished as a trail.
- If the Shaw Point properties on Sand Island were to come under NPS management during the life of the plan, contributing structures on the National Register of Historic Places would be preserved and the historic story of the area would be interpreted using a combination of personal and nonpersonal techniques. The historic road between the Shaw Point and East Bay would be reestablished as a trail, provided it can be built in an environmentally sound manner. One or more deeper water docks would be rehabilitated, if necessary, and be available for public overnight use. No

overnight use of the Camp Stella structures would occur.

- The Hansen farm contributing structures on Sand Island would be preserved and stabilized. In addition, the homestead building would be restored and the landscape would be restored to a greater extent than in the other alternatives. A trail would connect the farm with the island trail network and provide access to the shoreline. Personal interpretation would be provided to tell visitors about stories of the area (e.g., the Ojibwe people, stewardship, community, agriculture).

Other Nonwilderness Areas on the Islands

Under alternative 4, more trails, designated group campsites, and designated individual campsites with infrastructure to provide resource protection (e.g., bear locker, tent pad, fire ring, outhouse) and/or visitor amenities (e.g., picnic tables) would be provided on Sand, Basswood, and/or Oak islands. New day use areas that could accommodate small or large groups would be provided. Existing docks on the islands would be maintained or improved where needed (e.g., the Michigan Island dock), and possibly a few more public docks might be installed throughout the park. The number and location of all of these new visitor facilities would be subject to resource management criteria (e.g., resource sensitivity of sites), interest/demand, and other appropriate criteria.

In this alternative mooring buoys may be installed at selected high use bays if feasible, considering winter ice and if they can be annually maintained without a dive team. The southeast side of Raspberry Island; the east side of Rocky Island; and Presque Isle, Julian, and Quarry bays on Stockton Island are examples of areas where buoys might be installed.

Most of the Stockton Island – Presque Isle campsites would be relocated to Presque Isle

to address resource concerns (e.g., bank erosion, potential visitor conflicts with bears). However, for the most part, the three to four campsites at the north end of the campground do not face these resource problems and would remain in their existing location in this alternative. The new campsites on Presque Isle would be designed to have the same or better amenities than the sites they are replacing, and would be located no farther from the dock than the existing campsites. At least one of the new campsites would be designed to be universally accessible.

Under alternative 4, park managers would rehabilitate the Manitou fish camp. The cultural landscape would be partially rehabilitated, including historic vegetation patterns and circulation. Personal interpretive services would be provided to educate visitors about the area.

Wilderness Area

The wilderness area would continue to be managed largely as it is now. The desired conditions in table 1 in chapter 1 and the general guidance in chapter 2 would be applied. The existing Oak Island group campsite would continue to be available for public use. There would be no net gain in the number of trail miles, although trails may be rerouted to protect resources.

Unlike the other alternatives, in alternative 4 there would be a small increase in the number of individual dispersed designated wilderness campsites throughout the park. This increase would be subject to resource management criteria, interest in and demand for new campsites, impacts on wilderness character, and other appropriate criteria to be defined at a later date. The new designated campsites would have the same amenities as the existing designated campsites in the wilderness area.

Mainland Unit

Under alternative 4, a diverse range of recreational and interpretive opportunities would be provided on the mainland. Examples of new opportunities could include

providing water access campsites or walk-in campsites; attempting to complete the Lakeshore Trail from its present terminus to Little Sand Bay (possibly including the construction of an approximately 1-mile long boardwalk); improving or building new trails, such as universally accessible trails; and providing new wayside exhibits or staffed interpretive programs.

A new ranger/visitor contact station would be developed at Meyers Beach to provide services (orientation, permits, interpretation) for visitors in this portion of the park. A ramp also would be installed at Meyers Beach, which would provide access to the beach for visitors with disabilities.

A day use area for large groups would be developed in the Little Sand Bay area to provide a space for park staff to provide programs for educational groups. (No area is now available for this activity.)

Mainland NPS Visitor Centers

In alternative 4 the Bayfield Visitor Center would be built at a new central location on the waterfront in Bayfield to increase contact with visitors and assist people in getting out to the islands.

A new visitor contact station would replace the existing deteriorating structure at Little Sand Bay in the same location or nearby. The contact station would provide limited interpretation, orientation, and other visitor services for people using the mainland unit. The Hokenson house might serve as the contact station. Whatever option is selected for the visitor contact station, the historic integrity of the Hokenson fishery would be preserved.

The National Park Service would continue its commitment to the cooperative operation of the Northern Great Lakes Visitor Center.

NPS Operational (Administrative) Facilities

Park headquarters would remain at its present location in the old Bayfield County Courthouse, which would be renovated. Some administrative offices now at Little Sand Bay would be moved to another location.

At the expiration of the current lease, the park's operations center (including shops, docks, and storage space) would be moved to a new location, to be determined.

As noted earlier, if it is feasible and cost-effective, park housing would be provided on the triplex on Long Island. If it proves to be either infeasible or cost-prohibitive, then other options would be considered to provide an NPS presence on the island.

At Little Sand Bay, two nonhistoric seasonal staff houses would be removed and replaced with a set of apartments (studio or one-bedroom units). The apartments would be located outside the cultural landscape. In addition, three new trailer pads would be built for NPS employees and volunteers, in addition to the three existing trailer pads. As noted earlier, a ranger/visitor contact station would be built at Meyers Beach.

ESTIMATED COSTS

Cost estimates for alternative 3 are identified below. The cost estimates, in 2008 dollars, shown here are not for budgetary purposes; they are intended to only show a very general *relative* cost comparison among the alternatives. The actual costs to the federal government could vary depending on various factors such as the final design of each facility, opportunities for partnerships, and future economic conditions. Note that these costs do not include the costs for any additional plans or studies. A discussion of the development of the costs and a comparison between the

alternatives is included after the description of the alternatives.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Costs have been broken down into two categories: annual operating costs and one-time costs.

Annual costs include the costs associated with ongoing maintenance, utilities, staffing, supplies and materials, and any leasing costs. One-time costs include new construction, the cost of removal or divestiture of resources, the cost of restoration of resources, the cost of rehabilitation, and any cost of additions to structures.

Annual Costs

This alternative would be implemented with the current staffing levels plus six full-time-equivalent staff (FTEs) for resource management, resource protection, and interpretation. (One FTE is one person working 40 hours per week for one year, or the equivalent.) The park's operating budget would need to be increased by approximately \$600,000. The total cost to operate the park in this alternative would be \$3.5 million per year (in 2008 dollars).

One-time Costs

Alternative 4 would consist of the development and improvements to facilities and structures described in this alternative. The estimated development cost in 2008 dollars—for light station restoration/rehabilitation, historic structures preservation/stabilization, and visitor and administrative facilities—would be approximately \$24.5 million.



Management Zones

- Park Operations
- Historic
- Frontcountry
- Backcountry
- Primitive

(Symbols designate smaller zones)

- Park Operations
- Historic

- Bayfield
- Indian Reservation
- Lands Outside of the Park

- Existing Trail
- Proposed Trail
(When life estates are extinguished or expire)
- Lighthouse
- Dock

FIGURE 6
Preliminary Management Zones
Alternative 4
Apostle Islands National Lakeshore

National Park Service
 U.S. Department of the Interior
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DEVELOPMENT OF COST ESTIMATES OF THE ALTERNATIVES

NPS decision makers and the public must consider an overall picture of the complete costs and advantages of various alternatives, including the no-action alternative, to make wise planning and management decisions for Apostle Islands National Lakeshore.

In estimating costs of the alternatives, different types of costs need to be taken into account, including one-time costs and annual operating costs.

Initial one-time costs include the following:

- new development (including NPS infrastructure costs)
- major rehabilitation or restoration of existing facilities
- interpretive media (e.g., audiovisual materials, exhibits, waysides, and publications)

Examples of recurring annual costs include the following:

- annual lakeshore operating costs (e.g., staff salary and benefits, maintenance, utilities, monitoring, and contract services)
- ongoing repair and rehabilitation of facilities (i.e., the projection of past trends and known future needs into an annual estimate)

The following cost estimates are intended to provide a relative comparison of the costs of the alternatives. The derivation of the cost and staffing information in the table below can be found in the “Estimated Costs” sections of each alternative. These figures are not intended to be used for budgetary purposes or to implement funding requests. The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Table 10: Estimated Costs of the Alternatives (in 2008 dollars)

	Alternative 1 (No Action)	Alternative 2 (NPS Preferred)	Alternative 3	Alternative 4
Initial One-time Costs		\$27.7 million	\$16.6 million	\$24.5 million
Annual Costs	\$2.9 million	\$3.6 million	\$3.4 million	\$3.5 million
Total Staffing (FTEs)	36	43	41	42

MITIGATIVE MEASURES COMMON TO ALL ACTION ALTERNATIVES

Congress charged the National Park Service with managing the lands under its stewardship “in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” (NPS Organic Act, 16 USC 1) As a result, NPS staff routinely evaluate and implement mitigative measures whenever conditions occur that could adversely affect the sustainability of national park system resources.

Mitigative measures are the practicable and appropriate methods that would be used under the action alternative to avoid and/or minimize harm to park natural and cultural resources, wilderness, visitors, and the visitor experience.

The general management plan provides a management framework for the park. Within this broad context, the following mitigative measures would be used to avoid or minimize potential impacts from the implementation of the action alternatives. These measures would be applied to all of the action alternatives, subject to funding and staffing constraints. Additional mitigation would be identified as part of implementation planning and for individual projects to further minimize resource impacts.

The National Park Service would prepare environmental review (i.e., those required by the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and other relevant legislation) for these future actions where appropriate. As part of the environmental review, the National Park Service would avoid, minimize, and mitigate adverse impacts when practicable. The implementation of a compliance monitoring program would be within the

parameters of NEPA and NHPA compliance documents, U.S. Army Corps of Engineers Section 404 permits, etc.

The following mitigative measures and best management practices would be applied to avoid or minimize potential impacts from implementation of the action alternatives. These mitigative measures have been developed by using existing laws and regulations, best management practices, conservation measures, and other known techniques from past and present work in and around Apostle Islands National Lakeshore.

NATURAL RESOURCES

General

Apostle Islands National Lakeshore’s resources, including air, water, soils, vegetation, and wildlife, would be inventoried and monitored to provide information needed to avoid or minimize impacts of future development. Any museum collections generated by such activities would be managed according to NPS policies.

- Whenever possible, new facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible. During design and construction periods, NPS natural resource staff would identify areas to be avoided.
- Fencing or other means would be used to protect sensitive resources adjacent to construction areas.
- Construction activities would be monitored by resource specialists as needed.

- Construction materials would be kept in work areas, especially if the construction takes place near streams, springs, natural drainages, or other water bodies.
- Best management practices would be employed to reduce the introduction of invasive species during construction work and other soil-disturbing activities.
- All food-related items or rubbish would be removed.
- Visitors would be informed of the importance of protecting the park's natural resources and leaving these resources undisturbed for the enjoyment of future generations.
- Trails and campsites would be relocated if necessary for resource protection purposes.

Air Quality

- Measures to control dust and erosion during construction would be implemented and could include the following: water or otherwise stabilize soils, minimize vegetation clearing, revegetate with native species, cover haul trucks, and employ speed limits on unpaved roads in the mainland unit.
- NPS vehicle emissions would be minimized by using the best available technology whenever possible.
- Sustainable designs would be employed that reduce energy demands, thus reducing pollutant production.

Soundscapes/Natural Quiet

- Noise abatement measures would be implemented. These measures could include the following: a schedule to minimize impacts in noise-sensitive areas, use of the best available noise control techniques wherever feasible, use of hydraulically or electrically powered impact tools when feasible, and location of stationary noise sources as far from sensitive uses as possible.

- Facilities would be located and designed to minimize objectionable noise.
- The idling of motors (power tools, equipment, and vehicles) would be minimized.

Soils

- New facilities would be built on soils suitable for development.
- Soil erosion would be minimized by limiting the time that soil is left exposed and by applying other erosion control measures, such as erosion matting, silt fencing, and sedimentation basins in construction areas, to reduce erosion, surface scouring, and discharge to water bodies.
- Between construction seasons, filter fabric, temporary vegetative cover, and/or other means would be used as necessary to ensure stabilization of disturbed soils.
- Disturbed areas would be monitored for invasive plants.
- Once work is completed, construction areas would be revegetated with native plants in a timely period, and disturbed soils would be monitored for invasive species.
- To minimize soil erosion on new trails, best management practices for trail construction would be used. Examples of best management practices could include installing water bars, check dams and retaining walls; contouring to avoid erosion; and minimizing soil disturbance.

Water Resources (including Wetlands and Floodplains)

- To prevent water pollution during construction, erosion control measures would be used to minimize discharge to water bodies, and construction equipment would be regularly inspected for leaks of petroleum and other chemicals. The use of heavy equipment in waterways would be minimized.

- Best management practices, such as the use of silt fences, would be followed to ensure that construction-related effects were minimal and to prevent long-term impacts on water quality, wetlands, and aquatic species.
- Caution would be exercised to protect water resources from activities with the potential to damage water resources, including damage caused by construction equipment, erosion, and siltation. Measures would be taken to keep fill material from escaping work areas, especially near streams, springs, natural drainages, wetlands, and lakes.
- For new facilities, such as visitor centers, and to the extent practicable for existing facilities, stormwater management measures would be implemented to reduce nonpoint source pollution discharge from parking lots and other impervious surfaces. Such actions could include oil/sediment separators, street sweeping, infiltration beds, use of permeable surfaces, and vegetated or natural filters to trap or filter stormwater runoff.
- Some alternatives involve construction or improvement of boat docks. To help reduce the potential for impacts, site-specific studies of longshore sand transport would be undertaken before work would commence on these projects. Any activities involving dredging or the placement of fill material below the ordinary high water line of Lake Superior would comply with requirements of §401 and 404 of the Clean Water Act and with other applicable state permit programs (e.g., Great Lakes Submerged Lands Act). Impacts from any potential fill or dredge activities would be assessed further, and specific mitigative measures would be identified as part of the development of a specific design and further NEPA compliance that would be prepared in conjunction with the permit process.
- Wetlands potentially affected by new facilities would be delineated by qualified NPS staff or certified wetland specialists

and clearly marked before construction work. All new facilities would be sited to avoid wetlands, or if that is not practicable, to otherwise comply with Executive Order 11990: “Protection of Wetlands” and regulations of the Clean Water Act.

- New structures would be located outside floodplains with the exception of the Sand River area in alternative 4. A statement of findings for floodplains would be prepared if a new facility must be located in a floodplain.

Vegetation

- Areas used by visitors (e.g., trails) would be monitored for signs of native vegetation disturbance and the introduction of invasive plants. To control potential impacts on plants from trail erosion or social trailing, public education, revegetation of disturbed areas with native plants, and the installation of erosion control measures and barriers would be used.
- River access/crossing points and use barriers and closures would be designated to prevent trampling and loss of riparian vegetation.
- Revegetation plans would be prepared for disturbed areas. Revegetation plans should specify such features as seed/plant source, seed/plant mixes, soil preparation, fertilizers, and mulching. Salvage vegetation, rather than new planting or seeding, would be used to any extent possible. To maintain genetic integrity, whenever possible native plants that grow in the project area or the region would be used in restoration efforts. Use of nonnative species or genetic materials would be considered only where deemed necessary to maintain a cultural landscape or to prevent severe resource damage, and would be approved by the park’s natural resource specialist. Restoration activities would be instituted immediately after construction was completed. Monitoring would occur to ensure that revegetation

was successful, plantings were maintained, and unsuccessful plant materials were replaced.

- Where possible, trees removed during construction would be used in trail construction, mulch, or other construction material, or would remain on-site as habitat. Wood would not be moved off island.
- The transportation of firewood to or between islands would not be permitted; other materials transported from the mainland would be checked for the presence of insects such as gypsy moths.
- For any new campsite, such as the development that could occur on Presque Isle, the proposed site would be surveyed to determine if any threatened and endangered plant species are present. New developments would be carefully located to minimize impacts. If needed, well-defined trails would be developed between the sites and the water on the islands to help minimize inadvertent visitor impacts to any listed or rare plant populations in the area. Where appropriate, visitors would also be educated about the presence of these rare plants and the need to stay on trails.

Nonnative (Exotic) Plant Species

- Special attention would be devoted to preventing the spread of noxious weeds and other nonnative plants. Standard measures could include the following: ensure construction-related equipment arrives on-site free of mud or seed-bearing material; certify all seeds and straw material as weed-free; identify areas of noxious weeds before construction; treat noxious weeds or noxious weed topsoil before construction (e.g., topsoil segregation, storage, herbicide treatment); and revegetate with appropriate native species.
- All construction equipment would be pressure washed to ensure that it is clean and weed-free before entering the park.

- All vehicle parking would be limited to road shoulders, parking areas, or previously disturbed areas.
- Fill, rock, or additional topsoil would be obtained from the project area. If this is not possible, weed-free sources would be required to be obtained from NPS-approved sources outside the park.
- Monitoring and follow-up treatment of nonnative vegetation on revegetated areas would occur for several years following construction. Follow-up treatment could include mechanical, biological, chemical, and/or additional revegetation treatments.

Wildlife

- To the extent possible, new or rehabilitated facilities would be sited to avoid sensitive wildlife habitats, including feeding and resting areas, major travel corridors, nesting areas, and sensitive amphibian habitat.
- Techniques would be employed to reduce impacts on wildlife from construction, such as construction scheduling, biological monitoring, erosion and sediment control, the use of fencing or other means to protect sensitive resources adjacent to construction, the removal of all food-related items or rubbish, topsoil salvage, and revegetation. This could include specific construction monitoring by resource specialists as well as treatment and reporting procedures.
- Measures would be taken to reduce the potential for wildlife to get food from humans. Wildlife-proof storage containers would be required in developed areas (including visitor centers, picnic areas, trails, interpretive waysides, and campgrounds). Signs would continue to educate visitors about the need to refrain from feeding wildlife.
- Other visitor impacts on wildlife would be addressed through such techniques as visitor education programs, restrictions on visitor activities, and park ranger patrols.

Threatened and Endangered Species and Species of Concern

Mitigative actions would occur during normal park operations as well as before, during, and after construction to minimize immediate and long-term impacts on rare, threatened, and endangered species. These actions would vary by specific project and area of the park affected, and additional mitigation will be added depending on the specific action and location. Many of the measures listed above for vegetation and wildlife would also benefit rare, threatened, and endangered species by helping to preserve habitat. Mitigative actions specific to rare, threatened, and endangered species would include the following:

- Surveys would be conducted for rare, threatened, and endangered species as warranted.
- Critical habitat features would be protected and preserved whenever possible.
- Work would be conducted outside critical periods for the specific species when possible. Work in areas in or near suitable threatened and endangered bird habitat would occur as late as possible in the summer/fall.
- Facilities/actions would be located and designed to avoid adverse effects on rare, threatened, and endangered species. If avoidance is infeasible, actions would be taken to minimize and compensate for adverse effects on rare, threatened, and endangered species as appropriate and in consultation with the appropriate resource agencies. Work would be conducted outside critical periods for the specific species.
- Restoration and/or monitoring plans would be developed and implemented as warranted. Plans would include methods for implementation, performance standards, monitoring criteria, and adaptive management techniques.
- Measures to reduce adverse effects of nonnative plants and wildlife on rare,

threatened, and endangered species would be implemented.

- Management practices to protect piping plover nesting areas would continue to be implemented, such as closing and fencing off beaches from visitor use, monitoring the nesting areas throughout the breeding season, and minimizing trash along the beach that attracts predators. The National Park Service would continue to work cooperatively with the U.S. Fish and Wildlife Service and other partners to identify and implement appropriate mitigative measures to protect plover nesting areas and critical habitat within the park.

Hazardous Materials

- Apostle Islands National Lakeshore's spill prevention and pollution control program for hazardous materials would be followed and updated on a regular basis. Standard measures could include hazardous materials storage and handling procedures; spill containment, cleanup, and reporting procedures; and limitation of refueling and other hazardous activities to upland/nonsensitive sites.
- Plan notes would direct contract personnel to immediately stop work should suspected hazardous materials or wastes be encountered. NPS personnel will be notified, and appropriate remediation will be accomplished prior to resuming work.
- With the exception of motorboats, refueling of equipment would take place only on impervious containment pads.
- If appropriate, absorbent booms and other spill containment materials would be available on-site during construction.

Scenic Resources

- Where appropriate, facilities such as boardwalks and fences would be used to route people away from sensitive natural and cultural resources while still permitting access to important viewpoints.

- Facilities would be designed, sited, and constructed to avoid or minimize visual intrusion into the natural environment or landscape.
- Vegetative screening would be provided, where appropriate.

CULTURAL RESOURCES

All projects with the potential to affect cultural resources would be carried out in compliance with Section 106 of the National Historic Preservation Act to ensure that the effects are adequately addressed. All reasonable measures would be taken to avoid, minimize, or mitigate adverse effects in consultation with the Wisconsin state historic preservation office, tribal historic preservation offices, and, as necessary, the Advisory Council on Historic Preservation and other concerned parties. In addition to adhering to the legal and policy requirements for cultural resources protection and preservation, the National Park Service would also undertake the measures listed below to further protect the park's resources.

- All areas selected for construction would be surveyed to ensure that cultural resources (i.e., archeological, historic, ethnographic, and cultural landscape resources) in the area of potential effects are adequately identified and protected by avoidance or, if necessary, mitigation.
- Compliance with the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) would apply in the unlikely event that human remains believed to be American Indian are discovered inadvertently during construction. Prompt notification and consultation with the tribes traditionally associated with Apostle Islands National Lakeshore would occur in accordance with this act. If such human remains were believed to be non-Indian, standard reporting procedures to the proper authorities would be followed, as would all applicable federal, state, and local laws.
- Archeological documentation would be done in accordance with the *Secretary of the Interior's Standards for Archeological Documentation*.
- If during construction, previously undiscovered archeological resources were uncovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed in consultation with the Wisconsin state historic preservation office and, if necessary, associated American Indian tribes.
- New construction or alterations and rehabilitation of historic structures would be sensitively carried out in accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* to ensure that character-defining features are protected. Vegetation screening and sensitive topographic or other site selection criteria would be used to minimize the visual intrusion of new construction on historic viewsheds or in historic areas.
- The park would continue to consult with affiliated American Indian tribes to identify ethnographic resources to develop and accomplish programs in a way that respects the beliefs, traditions, and other cultural values of the Indians who have ancestral ties to park lands. Ethnographic resources would be protected and mitigated by such means as identifying and maintaining access for recognized and affiliated groups to traditional, spiritual/ceremonial, resource gathering, and other activity areas. As practical, new developments would be screened from these areas, and conflicting uses would be relocated or timed to minimize disruptions.
- Cultural landscapes would be protected, and any alterations and changes affecting cultural landscapes would follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties, with*

Guidelines for the Treatment of Cultural Landscapes (1996). All potential actions, such as thinning vegetation to reduce fuel loads, removing exotic species, modifying historic circulation patterns, removing noncontributing or nonhistoric structures and landscape features, or adaptively using a cultural landscape, would incorporate compatible design guidelines to retain essential historic character and mitigate potential adverse effects.

- Further background research, resource inventories, and National Register of Historic Places evaluation of historic properties would be carried out where management information is lacking. The results of these efforts would be incorporated into site-specific planning and compliance documents.
- No national register-listed or national register-eligible structure or landscape feature would be removed or allowed to decay naturally (molder) without prior review by park and region cultural resource specialists, including approval by the NPS regional director and consultation with the Wisconsin state historic preservation office. Before a national register-listed or national register-eligible structure is removed or allowed to molder, appropriate documentation recording the structure or feature would be prepared in accordance

with Section 110(b) of the National Historic Preservation Act, and the documentation would be submitted to the Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey program.

- Visitors would be educated on the importance of protecting the park's historic properties and leaving these undisturbed for the enjoyment of future visitors.
- Museum collections would be accessioned, catalogued, protected, and preserved in accordance with NPS standards and guidelines.

VISITOR SAFETY AND EXPERIENCES

Measures to reduce adverse effects of construction on visitor safety and experience would be implemented, including project scheduling and the use of best management practices.

Directional signs to orient visitors and education programs to promote understanding among visitors would continue in nonwilderness areas.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is defined as “the alternative that will promote national environmental policy as expressed in Section 101 of the National Environmental Policy Act.” Section 101 states that “it is the continuing responsibility of the federal government to

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage; and maintain, wherever possible, an environment which supports diversity, and a variety of individual choices;
5. achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life’s amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Three of the above criteria did not make a difference in determining the environmentally preferred alternative. Criterion 1 is satisfied by all the alternatives: Apostle Islands National Lakeshore is already a national park unit, and as a trustee of this area the National Park Service would continue to fulfill its responsibilities to protect this area for future generations. The difference between the alternatives in this regard is not appreciable. Likewise, all of the alternatives being

considered are intended to meet criterion 2: provide for all Americans a safe experience in a visually pleasing environment. Criterion 6 was determined to be not applicable to this plan.

When considering the remaining criteria, the environmentally preferable alternative is alternative 2, the NPS preferred alternative for Apostle Islands National Lakeshore. This alternative best satisfies the national environmental goals embodied in goals 3, 4, and 5—it provides a high level of protection of natural and cultural resources while concurrently providing for a wide range of neutral and beneficial uses of the environment. The preferred alternative maintains an environment that supports a diversity and variety of individual choices, and it integrates resource protection with an appropriate range of visitor uses and understanding.

The preferred alternative would provide more resource protection than the no-action alternative—e.g., unlike alternative 1, alternative 2 would restore/rehabilitate two light stations, relocate most of the Stockton Island – Presque Isle campground out of an environmentally sensitive area, preserve and stabilize the Manitou fish camp, and address resource concerns related to the Michigan Island dock. In addition, the preferred alternative would provide substantially more opportunities for public enjoyment and understanding of the park than the no-action alternative, and thus better fulfills criteria 3, 4, and 5.

Alternative 3 would provide about the same level of resource protection as alternative 2, but it would not provide as many opportunities for public enjoyment and understanding of the park—e.g., not including the visitor

center at the Bayfield waterfront, removing the Oak Island group campsite, not providing an access ramp at Meyers Beach, and not providing new day use areas on the islands and at Little Sand Bay would result in fewer opportunities for the public to enjoy the park and fewer individual choices compared to alternative 2. Thus, alternative 3 would not fulfill criteria 3, 4, and 5 as well as alternative 2.

Alternative 4 would also provide about the same level of resource protection as alternative 2, and would provide for more

visitor use opportunities, particularly on the mainland. But alternative 4 would also have a higher potential for more impacts to natural resources in comparison with the preferred alternative—providing more docks on the islands and increasing the number of campsites would increase both opportunities for visitor use and the potential for resource impacts compared to alternative 2. Thus, alternative 4 would not satisfy criterion 3 (attain the widest range of beneficial uses of the environment without degradation) as well as the preferred alternative satisfies this criterion.

FUTURE STUDIES AND IMPLEMENTATION PLANS

After the completion and approval of this *General Management Plan / Wilderness Management Plan*, other more detailed studies and plans will be needed before specific actions can be implemented. As required, additional environmental compliance (National Environmental Policy Act, National Historic Preservation Act, and other relevant laws and policies) and public involvement would be conducted. These additional plans and studies include the following:

- a resource stewardship strategy that provides comprehensive, long-range direction for natural and cultural resource management
- a commercial services strategy, which would identify necessary and/or appropriate commercial services in the park (including inexpensive boat shuttles to selected islands such as Basswood and Sand, and the appropriate level of outfitter activity in the park), consistent with the *General Management Plan*, and the best way for the National Park Service to manage them
- a study of what action should be taken to address the pitting and corrosion of the metal pilings in the Stockton dock
- a study to address the design of the park's docks in light of changing lake levels
- a study to address the impacts of the park's docks on sand transport and erosion
- studies of the park's cultural resources to fill in gaps in the knowledge and understanding of the park's resources, including surveys of archeological resources, ethnographic resources, historic structures, and cultural landscapes (including light stations)
- a plan/environmental assessment that addresses desired campsite distribution throughout the park; the plan would include a detailed look at the relocation of the Stockton and Oak Island campsites called for in the general management plans; opportunities for public involvement would be provided in the planning process
- an analysis of climate change scenarios that may affect the park's resources, infrastructure, and visitor experience, with assessment of their likelihood and impact, as well as potential actions that can be taken to adapt and respond to these changes consistent with the *General Management Plan*
- additional planning for the redevelopment of the Long Island light station if it is deemed feasible and cost-effective
- an acoustic monitoring study to determine baseline ambient sound levels and the level of noise generated by motorized boats, including the concession boat and cigarette boats during the "poker run" or similar events
- a self-evaluation of the park's current policies and practices with respect to accessibility for visitors with disabilities, and a transition plan that identifies actions to be taken to correct deficiencies identified in the self-evaluation
- a nomination for national historic landmark status for the park's collection of light stations
- line item construction and land acquisition proposals to implement the preferred alternative

ALTERNATIVES AND MANAGEMENT ACTIONS CONSIDERED BUT DISMISSED

PROVIDE PUBLIC LODGING ON ROCKY ISLAND

The planning team considered the possibility of rehabilitating and adaptively reusing the former fish camp cabins on Rocky Island for overnight public lodging.

The planning team dismissed this potential action because it is inconsistent with the original vision for the establishment of Apostle Islands National Lakeshore. The legislative history and proposals for the establishment of the park called for the islands to continue to be wild, with minimal facilities, with the possible exception of providing lodging on Sand Island.

BUILD A PEDESTRIAN BRIDGE OVER THE SAND RIVER

Another proposal the planning team considered and dismissed was building a bridge over the Sand River on the mainland. A bridge would be one way to complete the Lakeshore Trail from its present terminus to Little Sand Bay.

Building a bridge over the mouth of the Sand River is not feasible for several reasons, including building and maintenance concerns, environmental impacts, landownership issues, and cost. The bridge would need to be built across the mouth of the river (see appendix D for an aerial photograph of the area). Due to the environmental characteristics of the area, a long bridge (approximately 400 feet or more in length) would need to be built. A span bridge would not be feasible, because the dynamics of the river mouth and Lake Superior cause the mouth to wander and relocate. The sand dune that holds back an

approximate 15-acre freshwater estuary is subject to change from large storms from the north. During a storm, sand can be pushed in from the lake and could dam the mouth; this could cause the freshwater estuary to rise and rupture the dune at another location.

Hydrologically, the Sand River has a low base flow but high flood flows, resulting in extremes in discharges. From 1980 to 1984, when the U.S. Geological Survey monitored the river, flows varied from 3.9 to 1,630 cubic feet per second (Rose 1988).

The area also is subject to seiche activity, or standing waves, that can result in a rapid rise in water levels in the freshwater estuary. Large waves can occur due to storms, particularly in the winter, which potentially could wash out the bridge. In addition, the soils in this area are very limited, due to a shallow depth to the saturated zone, and are prone to frost action and ponding. Finally, it is likely that cribbing would need to be built to protect the bridge. All of this means that this would be a substantial and costly structure to build and maintain, with the chance that the bridge could be damaged or lost by wave action and storms.

Construction of the bridge would require an easement from the Red Cliff Band. The National Park Service does not have jurisdiction over some of the land where the bridge would need to be built, including the west side of the mouth of Sand River.

Also, the most feasible way to build and maintain the bridge would be to bring in supplies from the lake. Water transportation would dramatically increase the cost of building and maintain the bridge.

From an environmental standpoint, building the bridge would have many potential aquatic, coastal, vegetation, and potential fish impacts, even with the application of mitigative measures. The bridge pilings and cribbing would affect the water flows into and out of the freshwater estuary and the hydraulic characteristics of the area. If the dunes on the east and west side of the river mouth were stable, the process of putting cribs or pilings in the river to support a bridge that is at least 400 feet long would increase the velocity of the water leaving the river; this would erode and deepen the channel. The increased depth would have a direct effect on the freshwater estuary and wetlands and would cause them to drain. In addition, the longshore transport of sand in this area and sediment transport would be affected. Vegetation in the area would need to be removed to build the bridge. Water quality impacts would occur with the sinking of pilings and construction of cribbing. Fish movement into and out of the river could be affected by the presence of the bridge. All of these impacts together could result in a moderate to major, short-term, adverse impact to the aquatic environment of the freshwater estuary of the Sand River during construction of the bridge. After completion of the bridge, there would be a moderate, long-term, adverse impact.

BUILD A TRAIL AROUND THE SAND RIVER WETLAND COMPLEX

Another possible alternative to completing the Lakeshore Trail to Little Sand Bay would be to build a segment of the trail completely around the freshwater estuary and wetland complex, thus foregoing the need to build a boardwalk or bridge. This would require the trail to run outside the park's southern boundary for approximately 4.5 to 5 miles. The trail would cross a complex patchwork of tribal reservation, tribal allotments, and county lands. Determining the landownership and then obtaining easements from all of the landowners to build and maintain a trail across their property would be extremely difficult to do and probably would not be feasible. The county lands also are heavily managed for timber production, which could present conflicts with a recreational trail.

PERMIT BIKING ON THE LAKESHORE TRAIL

The planning team considered mountain biking as a possible use of the Lakeshore Trail in the mainland unit, although this idea was not raised in public scoping. However, the planning team has determined it would not be appropriate to include biking as a possible use because of the potential for resource impacts (e.g., soil erosion and compaction) and conflicts with hikers. In addition, biking is not a historic use of the Lakeshore Trail, and prohibiting this potential activity would not displace or adversely affect bikers. Finally, extensive opportunities for mountain biking already exist in the region.

COMPARISON OF THE ALTERNATIVES

Table 11: Comparison of the Key Differences in the Alternatives

Topic	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
CONCEPT	Park would continue to be managed as it is currently, with no substantial changes in facilities, visitor experience opportunities, or programs	Focus on providing opportunities for more visitors to have an island experience, while continuing to protect and maintain park resources	Focus on providing primitive, lake-oriented recreation/ education opportunities unique to the Apostle Islands, while continuing to protect and maintain park resources	Emphasis on providing a greater variety of structured recreation opportunities for visitors, especially on the mainland, while continuing to protect and maintain park resources
LIGHT STATIONS	Continue existing management, striving to maintain current resource preservation efforts and visitor experience opportunities to the extent possible	<ul style="list-style-type: none"> • Two light stations would be restored or rehabilitated, similar to the Raspberry Island light • Part of the Long Island light station would be rehabilitated for NPS staff housing if determined feasible and cost-effective 	<ul style="list-style-type: none"> • Focus would continue on maintaining the Raspberry Island light station • Part of the Long Island light station would be rehabilitated for NPS staff housing if determined feasible and cost-effective 	<ul style="list-style-type: none"> • Same as alternative 3 • Part of the Long Island light station would be rehabilitated for NPS staff housing if determined feasible and cost-effective
FORMER USE & OCCUPANCY/ CURRENT LIFE ESTATES (These actions would occur only if these leases expire and management reverts to the National Park Service during the life of this plan.)	Decisions on the future of the properties would be made on a case-by-case basis when each life estate is extinguished or expires; structures that are not historically significant would be allowed to molder or be removed; there would be no public use of the interiors of the structures	<ul style="list-style-type: none"> • <u>Rocky Island</u>: the contributing structures would be preserved and interpreted; one or more docks may be rehabilitated for public use 	<ul style="list-style-type: none"> • <u>Rocky Island</u>: same as alternative 2 except no interpretation would be provided 	<ul style="list-style-type: none"> • <u>Rocky Island</u>: same as alternative 2 but with more interpretation provided

Topic	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
FORMER USE & OCCUPANCY/ CURRENT LIFE ESTATES (continued)		<ul style="list-style-type: none"> • <u>West Bay Club</u>: the structure would be preserved and interpreted; if feasible, the club would be adaptively reused for public overnight use; the dock would be rehabilitated for public use; the historic road between the club and East Bay would be reestablished as a trail • <u>Shaw Point</u>: the contributing structures would be preserved and interpreted; if feasible, some of the Camp Stella structures would be adaptively reused for overnight use by permitted groups; one or more docks would be rehabilitated for public use; the historic road between Shaw Point and East Bay would be reestablished as a trail • <u>Hansen farm</u>: Contributing structures would be preserved and stabilized, the cultural landscape would be partially restored, and the area would be interpreted; a new trail would connect the farm to the island trail network and provide access to the shoreline 	<ul style="list-style-type: none"> • <u>West Bay Club</u>: the structure would be preserved and interpreted; no overnight use of the area; the dock would be rehabilitated for public use; no new trail would be established • <u>Shaw Point</u>: the contributing structures would be preserved and interpreted; no overnight use of the area; one or more docks would be rehabilitated for public use; no new trail would be established • <u>Hansen farm</u>: Same as alternative 2 	<ul style="list-style-type: none"> • <u>West Bay Club</u>: the structure would be preserved and interpreted; camping would be permitted in the West Bay area; the dock would be rehabilitated for public use; the historic road between the club and East Bay would be reestablished as a trail • <u>Shaw Point</u>: Same as alternative 2 except no overnight use of the area • <u>Hansen farm</u>: Same as alternative 2, except the homestead building would be restored

Topic	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
NONWILDERNESS (ISLANDS)	Continue existing management, striving to maintain current resource conditions and visitor experience opportunities to the extent possible; no major changes to the island facilities	<ul style="list-style-type: none"> • If feasible, new transportation opportunities would be sought to encourage visitors to come to selected islands • New visitor facilities would be provided, including day use areas; accessible trails; individual and group camp-sites on Sand, Basswood, and Oak islands; and an Ojibwe cultural demonstration area on Basswood Island • No change in the number of public docks, but some docks would be relocated, improved, or expanded for boaters (e.g., Michigan Island dock) • Most of the Stockton Island – Presque Isle campground would be relocated to Presque Isle, except for a few campsites on the north end that would not be relocated • The Manitou fish camp would be preserved and stabilized, the cultural landscape would be partially rehabilitated, and the area would be interpreted • No mooring buoys would be provided 	<ul style="list-style-type: none"> • Existing transportation opportunities would be maintained; no new transportation opportunities • A few new visitor facilities would be provided on Sand, Basswood, and Oak islands including interpretive trails and new group campsites, but no day-use facilities • No change in the public docks with the exception of improvements to the Michigan Island dock • The Stockton Island – Presque Isle campground would be relocated to Presque Isle • Same as alternative 2 • Same as alternative 2 	<ul style="list-style-type: none"> • Same as alternative 3 • Same as alternative 2 • Some docks would be improved or expanded for boaters, including the Michigan Island dock, and possibly more docks could be installed • Most of the Stockton Island – Presque Isle campground would be relocated to Presque Isle, except for a few campsites on the north end that would not be relocated • The Manitou fish camp would be rehabilitated, the cultural landscape would be partially rehabilitated, and the area would be interpreted • Mooring buoys may be provided at selected high use bays

Topic	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
WILDERNESS AREA	Strive to maintain current resource conditions and visitor experience opportunities	<ul style="list-style-type: none"> • No net gain in number of campsites, although sites may be reconfigured and relocated • The Oak Island group campsite would be relocated to nonwilderness area 	<ul style="list-style-type: none"> • Same as alternative 2 • The Oak Island group campsite would be removed 	<ul style="list-style-type: none"> • May be an increase in the number of dispersed campsites • The Oak Island group campsite would remain within the wilderness area
MAINLAND UNIT	Strive to maintain current resource conditions and visitor experience opportunities; no changes in visitor or administrative facilities	<ul style="list-style-type: none"> • A small loop trail would be developed in Little Sand Bay • An access ramp would be provided for visitors with disabilities at Meyers Beach • A day use area for large groups would be provided at Little Sand Bay • The Lakeshore Trail would not be expanded 	<ul style="list-style-type: none"> • Additional recreational opportunities provided for visitors, such as water trails, water-access campsites; more interpretive opportunities provided • A new hiking trail would be built from Little Sand Bay to the east end of the Sand River • No access ramp provided at Meyers Beach • No day use area provided at Little Sand Bay • The Lakeshore Trail would not be expanded 	<ul style="list-style-type: none"> • Same as alternative 3, plus the Lakeshore Trail would be completed from its present terminus to Little Sand Bay • Same as alternative 2 • Same as alternative 2 • The Lakeshore Trail would be completed to Little Sand Bay with a boardwalk
MAINLAND VISITOR CENTERS/ CONTACT STATIONS	No change in existing visitor centers	<ul style="list-style-type: none"> • Bayfield Visitor Center would be built in a new central location on the Bayfield waterfront and combined with operations center 	<ul style="list-style-type: none"> • Bayfield Visitor Center would be expanded and improved at its current location 	<ul style="list-style-type: none"> • Bayfield Visitor Center would be built in a new central location on the Bayfield waterfront

Topic	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3	Alternative 4
MAINLAND VISITOR CENTERS/ CONTACT STATIONS (continued)		<ul style="list-style-type: none"> • Little Sand Bay Visitor Center would be replaced with a smaller structure that offers the same level of visitor services as today • No change at Meyers Beach 	<ul style="list-style-type: none"> • Little Sand Bay Visitor Center would be replaced with an unstaffed kiosk • No change at Meyers Beach 	<ul style="list-style-type: none"> • Same as alternative 2 • A ranger/visitor contact station would be developed at Meyers Beach
OPERATIONAL FACILITIES	No change in existing operational facilities	<ul style="list-style-type: none"> • Park headquarters would remain in a renovated courthouse • Operations center would be colocated with the Bayfield Visitor Center on the waterfront • A ranger station would be developed at Meyers Beach, but no visitor facilities would be included. 	<ul style="list-style-type: none"> • Park headquarters would remain at the courthouse • Operations center would be moved to a new location (to be determined) • Same as alternative 2 	<ul style="list-style-type: none"> • Same as alternative 3 • Same as alternative 3 • A ranger/visitor contact station would be developed at Meyers Beach

Table 12: Summary of Key Impacts of the Alternatives

Topic	Alternative 1 (no action)	Alternative 2	Alternative 3	Alternative 4
NATURAL RESOURCES Soils	Most soils would not be affected; however, alteration would continue in popular areas such as around campsites and near the lakeshore.	Some soils would be altered due to construction of new facilities in some areas and increased visitor use in some localized areas. Adverse Impacts would likely be minor to moderate and long term. Establishing and monitoring user capacity indicators and standards should help prevent soil erosion.	Same as alternative 2.	Same as alternative 2.
NATURAL RESOURCES Geological and Coastal Processes	Visitors and existing docks would continue to affect sandscapes and shorelines, resulting in minor to moderate, long-term, adverse impacts in localized areas.	Visitors and existing docks would continue to affect sandscapes and shorelines, resulting in minor to moderate, long-term, adverse impacts in localized areas. The relocation of the Stockton Island – Presque Isle campground and the rehabilitation of several docks would result in long-term beneficial impacts.	Same as alternative 2.	Same as alternative 2.
NATURAL RESOURCES Surface Water Quality	Minor, long-term, adverse impacts in localized areas would continue.	Minor, long-term, adverse impacts in localized areas would continue, The rehabilitation of docks would result in negligible to minor, short-term, adverse impacts.	Same as alternative 1.	Same as alternative 1.
NATURAL RESOURCES Wetlands	Negligible, short- and long-term adverse impacts due to people occasionally walking in these areas would continue.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.

Topic	Alternative 1 (no action)	Alternative 2	Alternative 3	Alternative 4
NATURAL RESOURCES Floodplains (including flooding)	Negligible, short- and long-term adverse impacts due to people walking in the area would continue.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
NATURAL RESOURCES Vegetation	Negligible to minor, long-term, adverse impacts due to past construction and continuing visitor use.	Restoration actions, the application of user capacity indicators and standards, and possible increased presence on Long Island (if rehabilitation of the triplex is feasible and cost-effective) and Meyers Beach would result in an overall long-term, beneficial impact. The development of new facilities and increased visitor use on some islands would result in minor to moderate, long-term, adverse impacts.	Same as alternative 2.	Restoration actions, the application of user capacity indicators and standards, and increased NPS presence on Long Island and Meyers Beach would result in an overall long-term, beneficial impact. The development in this alternative would result in the greatest potential for adverse impacts to native vegetation due to the potential for the spread of nonnative species.
NATURAL RESOURCES Wildlife	Negligible to minor, long-term, adverse impacts would continue due to visitor use.	New developments on the islands would result in the loss of some habitat, resulting in a minor, long-term, adverse impact. Restoration efforts, increased NPS presence at Meyers Beach and Long Island, and the relocation of most of the Stockton Island – Presque Isle campground would result in long-term, beneficial impacts.		Same as alternative 2.

Topic	Alternative 1 (no action)	Alternative 2	Alternative 3	Alternative 4
NATURAL RESOURCES Threatened & Endangered Species	<p>No new developments or management actions would affect piping plovers and wolves.</p> <p>Continued visitor use of island beaches could have the potential to disturb plovers, but protection measures would keep affects minor.</p> <p>Infrequent encounters of wolves and visitors may have a negligible adverse impact on a few wolves in the area, but overall wolf use of the park should not be affected by visitor use in alternative 1.</p>	<p>No new developments or actions would have the potential to affect piping plovers and wolves.</p> <p>Visitors would continue to have the potential to disturb the plovers; however, with increased NPS presence on Long Island (if rehabilitation of the triplex is feasible and cost-effective) and the continuation of other protection measures, impacts would be expected to be negligible.</p> <p>Infrequent encounters of wolves and visitors would have a negligible adverse impact on a few wolves in the area, but overall wolf use of the park should not be affected by visitor use in alternative 2.</p>	Same as alternative 2.	Same as alternative 2.
NATURAL RESOURCES Natural Soundscape	Long-term, minor to moderate, adverse impacts in local areas due to visitor use and NPS maintenance and management activities.	<p>Same as alternative 1.</p> <p>In addition, short- and long-term, minor to moderate, adverse impacts due to construction and use of new facilities.</p>	<p>Same as alternative 1.</p> <p>In addition, short- and long-term, minor to moderate, adverse impacts due to construction and use of new facilities.</p>	<p>Same as alternative 1.</p> <p>In addition, short- and long-term, minor to moderate, adverse impacts due to construction and use of new facilities.</p>
WILDERNESS CHARACTER	Minor, long-term, adverse impacts would occur due to the continuing requirement to obtain a permit to camp in the wilderness.	<p>Same as alternative 1.</p> <p>In addition, the clustering of campsites would have a minor, long-term, adverse impact due to some visitors perceiving a loss of solitude.</p> <p>The relocation of the Oak Island group campsite out of the wilderness area would have a long-term, beneficial impact.</p>	Same as alternative 2.	<p>Same as alternative 1.</p> <p>In addition, development of additional dispersed campsites would have a minor, long-term, adverse impact due to some visitors perceiving a loss of solitude and apparent naturalness.</p>

Topic	Alternative 1 (no action)	Alternative 2	Alternative 3	Alternative 4
CULTURAL RESOURCES Historic Structures/ Cultural Landscapes	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.
CULTURAL RESOURCES Archeological Resources	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.	There would be no adverse effect on resources listed in or eligible for listing in the National Register of Historic Places.
CULTURAL RESOURCES Ethnographic Resources	There would be no adverse effect.	There would be no adverse effect.	There would be no adverse effect.	There would be no adverse effect.
VISITOR USE AND EXPERIENCE	There would be long-term, moderate to major, beneficial impacts due to continued access to high-quality lake and island recreation opportunities and the preservation of existing launches and docks at desired locations.	There would be minor to major, beneficial impacts due to enhanced access to the islands; increased recreational opportunities; and preservation of natural quiet, solitude, and primitive recreation throughout most of the park.	There would be minor to moderate, beneficial impacts due to slight improvements in access to the islands, continuation of existing recreational opportunities, and increased interpretive opportunities on the mainland.	Same as alternative 2.
PARK OPERATIONS	There would be minor to moderate, long-term, adverse impacts due to inadequate facilities, fragmentation of park staff and facilities, staffing shortages, and lack of funding.	There would be long-term, beneficial impacts due to actions to improve park operations facilities, decreased staff fragmentation, and increased staffing levels.	Same as alternative 2.	Same as alternative 2.
SOCIOECONOMIC ENVIRONMENT	There would be no effect.	There would be long-term, beneficial impacts due to increased spending by visitors, increased spending by the National Park Service, and increased spending by new park employees. These changes, however, would be relatively small compared to the overall regional economy.	Same as alternative 2.	Same as alternative 2.



East Landing at Devils Island



Outer Island Lighthouse

CHAPTER 4: AFFECTED ENVIRONMENT

INTRODUCTION

The “Affected Environment” chapter describes the existing environment of Apostle Islands National Lakeshore and the surrounding region. The focus of this part is on key natural and cultural resources, wilderness qualities, uses, facilities, and lakeshore operations that have the potential to be affected by the alternatives should they be implemented. For additional information on the Apostle Islands, see the park’s website (www.nps.gov/apis), and the following sources:

NPS. 1988. *The Apostle Islands: A Guide to the Apostle Islands National Lakeshore. The Official National Park Handbook*. Washington, D.C.: NPS Division of Publications.

NPS. 1989. *General Management Plan / Environmental Assessment, Apostle Islands*

National Lakeshore, Wisconsin. Denver, Colorado: Denver Service Center.
Busch, Jane C. 2008. *People and Places: A Human History of the Apostle Islands*. Prepared under contract to the Midwest Regional Office, National Park Service, Omaha, Nebraska.

Howk, N., ed. 2003. *Hiker’s Guide to Apostle Islands National Lakeshore*. Fort Washington, Pennsylvania: Eastern National.

Nuhfer, E., ed. 2006. *A Guidebook to the Geology of Lake Superior’s Apostle Islands National Lakeshore and Nearby Areas of the Bayfield Peninsula of Wisconsin*. Fort Washington, Pennsylvania: Eastern National.

NATURAL RESOURCES

SOILS

Soils in Apostle Islands National Lakeshore are very young, yet quite diverse. They formed in a variety of parent materials over the last 11,000 years after the retreat of glaciation in the region. As soon as the topmost point on an island was exposed to the atmosphere, weathering, plant colonization, and soil formation began. The soils of the Apostle Islands are derived from several parent materials that cause distinct variations over short distances. These parent materials are: lacustrine clay, water-deposited sand (by stream as well as lake), and glacial till (Brander et al. 1978). Clay is present under both loam and sand in the two most abundant soil classes. Twenty percent of the soils on the islands are sand over clay (NPS 2005a).

Topography has played a part in soil development. Most of the 21 islands are relatively level and low-lying. Water runoff is limited, with rain and snowmelt filtering downward through soil. Oak Island differs due to its elevation and rugged landscape (Cary et al. 1978).

The Natural Resources Conservation Service mapped soils throughout the entire park and completed the soil survey in 2006 (USDA-NRCS 2006). Fifty-two soil map units were identified, of which the most common were Superior-Sedgwick complex, 0%-6% slopes (found in 12.8% of the park) and Kellogg-Allendale-Ashwabay complex, 2%-6% slopes (11.6% of the park). The number of soil mapping units on the islands varied from one on Eagle and Gull islands to thirty-one on Stockton Island.

The soils on the Apostle Islands were found to be quite diverse, ranging from sandy to clayey, and some new series were needed to define

soils unique to the islands. Soil types on the islands include clays, loams, sands, and various combinations of these types. Clay is present as subsoil under both loam and sand in the two most abundant classes (NPS 2005a). A considerable amount of organic soils (histisols) exist in the park, forming in organic parent materials. These soils, including the Beseman, Cathro, Dawson, Loxley, Lupton, and Rifle soils, have different potential management issues than the “mineral soils” in the park. Soil drainage classes range from excessively well drained to very poorly drained, with ponding being an issue on several soils. Seasonal high water tables also are an issue. Seven hydric soil map units related to potential wetlands are present in the park.

Continuing natural shoreline erosion has been a concern in the park. Lake Superior wave action has eroded steep bluffs on the islands. This erosion threatened the light stations on Outer and Raspberry islands (NPS 1999a, NPS 2001, NPS 2003). Erosion control work was done to stabilize and revegetate slopes adjacent to the structures on Raspberry Island from 2002-2004 and on Outer Island from 2004-2006. Wave action also has eroded the shoreline and threatens to eliminate several of the Presque Isle Bay campsites.

Bank erosion also has occurred due to people climbing up and down banks. Bank erosion was documented over a two-year period at the Presque Isle Bay campground (Milfred 1987 as cited in NPS 2005c). Subsequent monitoring of Stockton Island – Presque Isle campsites has showed increased shoreline erosion at several campsites.

GEOLOGY AND COASTAL PROCESSES

Today's Apostle Islands are the result of events beginning over 1 billion years ago. Colorful sandstones, which form the underlying bedrock and core of the islands, were deposited during Precambrian times. This sandstone, especially the Devils Island formation, forms shelves and cliffs on the islands and on the northern shore of the Bayfield Peninsula. Caves are also present on the mainland near Meyers Beach and on Devils and Sand islands.

Pleistocene glaciation, which started around 3 million years ago and ended about 10,000 years ago, was the next significant event in the geological history of the islands. Thick deposits of reddish till (material of various sizes) were deposited by the glaciers on most of the islands. Three deposits of till were laid down, with the oldest being a sandy till and the two youngest being rich in clay (Nuhfer and Dalles 1987). Steep bluffs formed where the till was exposed, especially on the western sides of most of the islands.

The islands and mainland coast continue to be shaped by wave and wind energy generated by Lake Superior and by weathering from precipitation, frost, wind, and sun. Coastal features in the park include sandstone cliffs, sandy or silty bluffs, and sandscapes (sand-based landforms). Sandstone cliffs and bluffs are continually eroded by lake waves. On the other hand, the park's sandscapes are dependent upon the longshore transport of sand from these cliffs and bluffs—changes in the movement of suspended materials along and around the island shorelines (littoral drift) can affect the formation and disintegration of sandscapes like sandbars and tombolos.

Apostle Islands National Lakeshore has one of the most diverse collections of high-quality sandscapes in the Great Lakes region. The park has 17 designated sandscapes, which have been monitored since 1988 (NPS 2007b). The state of Wisconsin recognized the variety of the park's sandscapes when it designated

the Apostle Islands Sandscapes State Natural Area, including Raspberry, Rocky, Stockton, and Outer islands, in 1992. The park's sandscapes tend to occur on the southern end of islands and are found only where glacial till along shorelines provides a ready supply of sand (Nuhfer and Dalles 1987).

Five types of sandscapes are found on the islands: sandspits, cusped forelands, tombolos, a barrier spit, and numerous beaches. True sandspits are found on several islands, including Cat and Outer. Cusped forelands are a type of wedge-shaped sandspit that are wider than they are long, and are found on Raspberry, South Twin, Rocky, Oak, Ironwood, Otter, Bear, and York islands. Tombolos are sand features that join either two islands or an island to the mainland. Rocky and York islands support well-developed tombolos, while Stockton Island has one of the few examples of a double tombolo in the Great Lakes (Judzewicz and Koch 1993 as cited in NPS 2005a). Barrier spits are elongate sand ridges that extend generally parallel to the coast. Long Island is a barrier spit with a narrow connection to the mainland. Sandscapes are typically comprised of a beach that is devoid of vegetation, active dunes, interdunal hollows, stabilized dunes and/or beach ridges. Frequently a bog or alder thicket is associated with sandscapes.

Factors within and outside the control of the National Park Service influence coastal processes. Lake Superior water levels, which are partially regulated through orders of the International Joint Commission, affect erosion rates on bluffs and sandscapes. NPS docks and other developments also may seriously affect local coastal processes. Docks, especially those with solid cores, affect the movement of sand along the coastline. Some of these docks are likely affecting the drift of sand (NPS 1999a). For example, the Little Sand Bay docks were found to alter currents and longshore drift, which in turn altered sedimentation patterns (Rittschof 1976). Likewise, a solid dock in front of the Michigan Island light station, built in 1987, affected

erosion on one side of the dock for several years. In 1993 the dock was modified to reduce its impact on erosion, and to increase its usefulness for docking, but problems at the dock continue (NPS 2007b).

Climate change will also likely affect Lake Superior coastal processes in the future, although specific effects in the park are difficult to predict. Scientists believe it is likely that the level of Lake Superior will drop over the remainder of the century. With a drop in the lake level, beaches may expand, channels will become shallower, and (in the long term) the park's expanded land area may approach the legal boundary of the park. Decreasing ice cover could also increase the impacts of storms in the shallow bays of the lake, including the park (Lofgren et al. 2002, Union of Concerned Scientists and the Ecological Society of America 2005). These changes could in turn increase erosion and deposition rates and the movement of sand, and thus affect the park's sandscapes.

SURFACE WATER QUALITY

Lake Superior generally has very good water quality. The overland drainage area is small compared to its immense size, and the watershed has a high percentage of forest cover, which contributes to the high water quality. Water quality in and around the Apostle Islands reflects the general oligotrophic (low nutrient) character of Lake Superior in general. The water quality of the park's Lake Superior surface waters is considered to be good (Ledder 2003, NPS 2005c, NPS 2007b). The park's mainland streams, mainland coastline and bays, and the islands' coastline and bays all appear generally to have high water quality (NPS 2007b). There appears to be little impact of human activities on water quality within the park. No bacteria samples collected annually at Little Sand Bay and Stockton Island have exceeded state water quality standards (NPS 2004d).

Reflecting the park's high water quality, a 0.25-mile buffer of Lake Superior waters

around the islands was designated as Outstanding Resource Waters (ORW) by the state of Wisconsin in 2006 (Wisconsin Administrative Code NR 102.10 1m). Lake Superior also has been recommended by the International Joint Commission (IJC) as a demonstration area where no point source discharge of any persistent toxic chemical will be permitted (Lake Superior Binational Program 2000).

Water quality has been monitored at Apostle Islands National Lakeshore since 1996. This monitoring has included measuring physical and chemical parameters at five Lake Superior sites every two to three years and doing more detailed monitoring for physical, chemical, and biological parameters approximately every five years at three lagoons and at five Lake Superior sites. Beginning in 2006, the NPS Great Lakes Inventory and Monitoring Network began long-term monitoring within the park that focuses on monitoring four of the park's lagoons on an annual basis.

In 1996 long-term water quality sampling sites were established in the park (Lake Superior Ecosystem Research Center 1997). Five open lake and three lagoon sites were sampled. Physical and chemical water quality parameters were measured and biological samples taken (zooplankton and benthos). The open water sites were found to have low nitrogen and phosphorus levels, low chlorophyll "a" concentrations, and high water clarity. All of the lagoon sites had low or nonexistent benthic organism populations and warm, highly colored, acidic waters. A three-year water quality study (1986-1988) was conducted in the park by the Center for Lake Superior Environmental Studies, University of Wisconsin-Superior (McCauley et al. 1989). Consistent with the most recent sampling, results of this study indicate that park waters are relatively free from contamination by human wastes, that concentrations of nutrients (e.g., nitrogen and phosphorus) were low, and that oil and grease in the sediments of heavily used Stockton harbor were low. Water quality studies conducted from 1979 to 1984 by the U.S.

Geological Survey (USGS) in Lake Superior and the park, including inland streams and lagoons and nearshore waters within the park, indicated similar results (USGS 1988).

There are relatively few local sources of water pollution in the archipelago and the mainland. The park's water quality is temporarily degraded locally by strong storms. Natural spring runoff erosion may be the source of some contaminants. Heavy rain and spring runoff may discolor nearshore lake waters, and wave erosion generated from high winds can cause a major increase in particulate matter in the waters around islands with clay/sand banks.

Some pollution probably comes from unburned fuel discharged by outboard motorboats. Some areas used for full body contact recreation in the park, such as swimming and diving, are also areas where boats tend to moor and, as a matter of course, discharge "gray water" and bilge water. Gray water potentially contains nutrients and other contaminants (e.g., from cleansers). Although illegal, some boaters may discharge sewage into the lake. Campers may also be adding nutrients to Lake Superior; however, they are discouraged from bathing and cleaning dishes in the lake.

There are many potential sources of water pollution outside the park including the discharge of treated wastewater from towns and cities (although many local communities have been making significant improvements to their treatment plants recently); industrial discharges; runoff from agricultural, silvicultural, and quarrying operations; discharges from commercial cargo ships; pollution from recreational use (tour boats and private boats) and marinas; stormwater discharges; and atmospheric deposition (NPS 1999b, NPS 2005a, NPS 2007a). But these pollutants are widely scattered, and strong circulation disperses pollutants widely.

Airborne contamination is the major source of the most persistent pollutants in Lake

Superior (NPS 2007b). Lake concentrations are minute; however, biological accumulation in aquatic organisms of these contaminants continues to be a concern. Lake Superior has an extremely slow flushing time for toxins. It takes approximately 200 years for the lake to clear 95% of nondegrading, nonsettling pollutants. Only 0.05% annually can be expected to leave by way of St. Mary's river, the only outlet for the lake (NPS 2005a). Fortunately, concentration levels have been decreasing since the use and manufacturing ban of many of these compounds.

Another potential source of pollution is a spill of cargo or fuel from Great Lakes cargo ships. These ships travel within 5 miles (8 km) of Devils and Sand islands, 4 miles (6 km) of Michigan Island, and 0.6 mile (1 km) of Long Island, and may come closer during storms (NPS 2007b).

Introduction of toxic chemicals, such as polychlorinated biphenyls (PCBs), into Lake Superior is a serious concern. The vast majority of PCBs in Lake Superior have entered the system through atmospheric deposition (Eisenreich 1987). PCBs may move back out of the water at both the air-water and water-sediment interfaces. PCBs, dioxins, and other organo-chlorides accumulate in the fatty tissue of organisms and tend to bioaccumulate in the food chain. High levels of PCBs have been found in nesting herring gulls, and elevated levels of PCBs, PBDEs (polybrominated diphenyl ethers), and DDE (dichlorodiphenyldichloroethylene) have been found in nesting bald eagles in the park (Meyer, et al. 1994, NPS 2009). During the 1990s levels of PCB and DDE have decreased in bald eagles. Toxaphene, another bioaccumulative toxin, has become of increasing concern. Elevated levels of toxaphene were measured in lake trout collected near the Apostle Islands, and toxaphene was found by the Minnesota Pollution Control Agency (1996) to be the dominant contaminant in lake trout in Lake Superior. Finally, high levels of mercury, especially methyl mercury, have been detected

in the park's island lagoons (Stockton, Outer), and in samples taken from fish and eagles (NPS 2007a; NPCA 2007; J. Van Stappen, Apostle Islands National Lakeshore, pers. comm., March 16, 2007). This toxic chemical likely has been transported into the park from external sources such as emissions from power plants.

WETLANDS

Wetlands are areas that are inundated or saturated by surface or groundwater often enough and long enough to support a prevalence of vegetation typically adapted for life in saturated soil conditions. The Wisconsin Land Cover Grid classified 2,041 acres (846 hectares) of the islands as wetlands, or about 5% of the islands. In the mainland unit about 220 acres (89 hectares) were classified as wetlands, or about 9% of the area (NPS 2007b). Although all of the park's wetlands have not been mapped using the U.S. Fish and Wildlife Service's *Classification of Wetlands and Deepwater Habitats* (USFWS 1979), selected wetlands have been mapped and characterized on the islands and the mainland (Judziewicz and Koch 1993; Meeker 1998; Meeker 2000; Meeker 2002).

Wetland types in the park include alder thickets, beaver flowages, bogs, lagoons, marshes, ridge/swale communities, and wet sedge meadows. These wetlands contain unique flora and fauna species and add a considerable amount of ecological diversity to the park. Wetlands dominated by thickets of speckled alder are frequent on the Apostle Islands and are found in association with a number of habitats. These very wet communities frequently fringe beaver flowages, sandcape bogs, and old roads (Judziewicz and Koch 1993). Beaver flowages (dams) on Outer Island greatly increase the diversity of bird habitat on the island. Bogs dominated by sedges, ericads, and sphagnum mosses often occur in the filled-in lake basins that occur just inland from sandcape dune ridges. The larger bogs on Michigan, Outer, and Stockton islands have lagoons with

floating and submersed aquatic species. A perched bog, on an old beach ridge, is on Bear Island.

Small wetlands are present behind or in close proximity of sandspits on Raspberry and Rocky islands. Bogs are also found on poorly drained lowlands on Devils, Otter, Sand, and South Twin. These interior wetlands are often smaller and have poorer bog floras than their coastal, sandcape counterparts, but all of the common ericads and insectivorous plants are usually present (Judziewicz and Koch 1993). Lagoons occur on Michigan, Outer, and Stockton islands, and on the mainland unit. The Julian Bay lagoon on Stockton Island has a very rich flora, including rare species such as coast sedge (*Carex exilis*), Michaux's sedge (*C. michauxiana*), sooty beak rush (*Rhynchospora fusca*), dragon's mouth (*Arethusa bulbosa*), and yellow-eyed grass (*Xyris montana* Ries). Long Island has several types of wetlands including ridge and swale topography in its northwest end, sphagnum/heath wetland behind the Chequamegon Bayside beach running along most of its length, and extensive sedge meadow habitat on its southeast end.

On the mainland unit there are two barrier beach/bog complexes. One is near the Little Sand Bay dock. The other much more extensive wetland, covering over 370 acres (150 ha) is the Sand River bog or estuary complex. This wetland is where the Sand River empties into Lake Superior. In back of the barrier beach are alder-willow-dogwood thickets that grade into a marshy bog mat with pools of open water. These wetlands rival Long Island in the diversity of submersed and emergent aquatic plants (Judziewicz and Koch 1993).

FLOODPLAINS

Current data on floodplains is limited. The largest drainage on the mainland unit is Sand River, which flows through the park and empties into Sand Bay on Lake Superior. However, the majority of the Sand River

drainage basin is outside the park. Saxine Creek is located at the extreme west end of the mainland unit, and several other smaller, unnamed drainages are scattered through the unit. The presence of surface drainages varies by island and is based upon topography, island size, and relief. Variation in elevation is not a significant feature of Apostle Islands. Generally, larger islands have small intermittent streams. Stockton and Outer islands have more extensive stream systems, some of which are impounded by beaver dams. The smaller islands, including Devils, Eagle, Ironwood, Gull, North Twin, and South Twin, lack any significant drainage channels that are identifiable on 10-foot interval topographic-contour maps. Streams are present on all other islands but most notably on Oak (which has the greatest topographical relief, approximately 400 feet), Outer, and Stockton (which has the largest single drainage basin, 2.56 square miles) (NPS 2005a).

VEGETATION

Located in far northwestern Wisconsin, Apostle Islands National Lakeshore is at the continental northwestern limits of the hemlock-white pine-northern hardwood forest and also contains elements of the boreal forest. In presettlement times about 90% of the islands were covered by an upland mixed coniferous/hardwood forest dominated by eastern hemlock (*Tsuga canadensis*), white pine (*Pinus strobus*), sugar maple (*Acer saccharum*), yellow birch (*Betula alleghaniensis*), and white birch (*Betula papyrifera*) (Judziewicz and Koch 1993). Presettlement vegetation of the mainland unit was most likely eastern hemlock, yellow birch, and white cedar (*Thuja occidentalis*) with smaller amounts of balsam fir (*Abies balsamea*), white birch, and white pine (Judziewicz and Koch 1993).

History

The park's current forests reflect complex disturbance histories. Forests within the park

range from pristine old-growth forest without a history of deer browsing, to forests that have been subjected to logging, fires, and extensive deer browsing. Areas that escaped commercial logging include North Twin, Eagle, and Gull islands and the lighthouse reservations on Outer, Sand, Devils and Raspberry islands. In the case of Devils and Raspberry islands, the reservations included the entire islands. A total of approximately 1,300 acres of old-growth forest remains on the islands in the park. A 200-acre old-growth forest on the north end of Outer Island is one of the best examples of northern hardwood hemlock forest and one of the oldest stands remaining in the upper Great Lakes region (Judziewicz and Koch 1993). This stand is unique because it has not been affected by deer browsing. An old-growth forest remnant on the north end of Sand Island supports extremely large white pine trees. Very little old growth is left in the mainland unit except for a few hemlocks and hardwoods in small but rugged ravines near Little Sand Bay.

Most of the park's forests were logged, first for white and red pines (*Pinus resinosa*), white cedar and hemlock (ca. 1870), and later for hardwoods, particularly sugar maple and yellow birch. Today, a maturing second-growth northern hardwood forest exists throughout the islands. The species composition of the boreal forest community was not changed due to logging. Today this community is dominated by white spruce, balsam fir, tamarack (*Larix laricina*), white cedar, birch, and aspen, as it was during presettlement times. However, other effects of logging remain. Hemlock is no longer dominant, except in stands on Bear, Oak, Outer, and Stockton islands; white pine is much less abundant than it was historically and primarily occurs on sandscapes as mature second-growth stands and as scattered super-canopy individuals on Outer, Sand, Devils, and North Twin islands. The most important tree species in the archipelago now are white birch, sugar and red maples, balsam fir, and white cedar (Judziewicz and Koch 1993). In the mainland unit, the forest now consists of

pole-sized quaking aspen (*Populus tremuloides*), sugar maple, balsam fir, and some white spruce (*Picea glauca*).

Following logging, deer populations irrupted on many of the islands, severely impacting species favored by deer, such as Canada yew (*Taxus canadensis*). This species has only minimally recovered on islands impacted by deer and may take hundreds of years to recover (NPS 2007c). Several of the islands, however, that did not have a history of deer populations and others that had moderate deer populations have lush stands of Canada yew—a very rare species on the mainland due to deer browsing. Islands that historically had few to no deer include Devils, Eagle, North Twin, Outer, Raspberry, Sand, and York (NPS 2005a). In recent years, deer populations have become established on both Sand and York islands, and extensive deer browse is threatening this rare vegetation community. Islands that historically had a moderate deer population but where yew is still dominant include Cat, Ironwood, Michigan, and Otter islands.

Vegetation Today

The three largest ecological communities present today in the park are mesic forest (comprising 72% of the park), wet mesic forest (17% of the park), and dry mesic forest (5% of the park) (NPS 2005a). The mesic forest community type includes the hemlock/white pine/hardwood, and boreal forests. Hemlock is no longer a dominant tree in the archipelago except in stands on Bear, Oak, Outer, and Stockton islands. A comparison of presettlement and present-day community types shows hemlock has decreased from 26% to 4%. Decline of hemlock and white pine has benefited aspen, white birch, and sugar maple the most. Aspen species and white birch (18% increase between presettlement and current forests) also increased dramatically in the first decades after logging ceased but are now mature and starting to decline. Sugar maple is doing well on well-drained upland second-growth sites and is the only species exhibiting good

seedling and sapling recruitment. Boreal forest is an important upland community in the archipelago. Elements of the boreal forest exist on North Twin, Raspberry, Rocky, Sand, South Twin, and York islands, but the northern two-thirds of Devils Island has what Judziewicz calls “classic boreal forest” where white spruce, balsam fir, white cedar, white birch, and aspen dominate (Judziewicz and Koch 1993).

Wet mesic forests are comprised of white cedar, balsam fir, and black ash. One type of wet mesic forest is the krumholtz forest, or those stunted by the harsh conditions such as shallow soils and exposure to maritime weather. Krumholtz forests are found on the northern tips of Bear, Cat, Devils, and North Twin islands, and on Austad Point on Outer Island. They occur along coastal bluff-tops and extend inland between 33 to 98 feet (10-30 meters) on Devils Island, which has the best example of this type. The forests are low and include white birch, balsam-fir, white cedar, and Canada yew.

Several other ecological communities occur far less frequently in the park, each of which covers less than 1% of the park (NPS 2005a; Judziewicz and Koch 1993). These communities include wet forest, northern shrub (alder) thickets and beaver flowages, bogs and lagoons, Great Lakes barren, clayscapes (clay bluffs), rockscapes (Precambrian sandstone ledges and bluffs), and sandscapes (dunes, pine savanna and forest, and bogs).

About one-third of the islands’ coasts consist of Precambrian sandstone ledges and bluffs. Local vegetation on these rock faces depends on the microhabitat and can vary from common willows (*Salix* spp.) and weed species, to subarctic rarities and species with calcareous tendencies. Steep reddish clay bluffs are vegetated with small trees of balsam poplar, white birch, red maple, and showy mountain ash (*Sorbus decora*) (Judziewicz and Koch 1993).

Because the Apostle Islands are at the extreme northern frontier of Wisconsin, they tend to provide plant habitats not found elsewhere in the state. Many of the rare plants in the park are arctic remnants, such as butterwort (*Pinguicula vulgaris*) and arctic primrose (*Primula mistassinica*). Regionally rare habitats in the park include old-growth forest, forest seep, clay bluff communities, sandstone cliff communities, lagoon and bog communities, forested ridge and swale, coastal fen, Great Lakes barrens (the only example in the state, found on the Stockton Island tombolo), and dune communities (NPS 2007c). The Wisconsin Department of Natural Resources Natural Areas Program recognized the special qualities of the Apostle Islands' vegetation and landscapes, designating the Apostle Islands Maritime Forest, Maritime Cliff, Sandscapes, and Critical Species State Natural Areas in 1992.

As noted above, the park has a rich assemblage of sandscapes, including sandspits, cusped forelands, tombolos, a barrier spit (Long Island), and beaches. These areas add a lot of biodiversity to the park, but they are very fragile. Typical park sandscapes include the following vegetation zones: a beach without vegetation, active dunes, intertidal hollows (sometimes with ephemeral pools or ponds), stabilized dunes and/or beach ridges (sometimes covered with pine savanna or forest), and finally a filled-in lake basin covered either with bog or alder thicket vegetation (Nuhfer and Dales 1987 and Judziewicz and Koch 1993, as cited in NPS 2007b). Plant communities on these habitats are adapted to survive harsh conditions, including shifting sands, strong winds, and nutrient-poor soils. They are dominated by dune vegetation, American beach grass (*Ammophila breviligulata*), and beach pea (*Lathyrus japonicus*), which help to stabilize the sandscape environment, as well as a shrub and forest component of speckled alder (*Alnus rugosa*), quaking aspen (*Populus tremuloides*), and white birch. Shrubs that help stabilize the sandscapes include beach heather (*Hudsonia tomentosa*), dwarf juniper

(*Juniperus communis*), blueberry (*Vaccinium angustifolium*), and rose (*Rosa blanda*).

Over 750 plant species occur within the park, including 26 rare species of concern. Nonnative vegetation in the park is confined primarily to disturbed landscapes, including old logging camps, farmsteads, fishing camps, light station grounds, and quarries. Eroding clay bluffs tend to have fairly high numbers of nonnative plants. NPS developed areas, such as Presque Isle on Stockton Island, and developments on the mainland unit also contain nonnative species. Sandscapes and wetlands are vulnerable to invasion of nonnative species, especially where native vegetation has been affected by human disturbance (NPS 1999a). Invasive nonnative species that are of most concern to the park's native vegetation include purple loosestrife (*Lythrum salicaria*), spotted knapweed (*Centaurea biebersteinii*), and Japanese knotweed (*Polygonum cuspidatum*). Purple loosestrife has been found on Long Island, both in the "cut area" and along the tip of the island on Chequamegon Bay shore area. Spotted knapweed has been found on the north end of Outer Island, along Quarry Bay on Stockton Island, and at Little Sand Bay and Meyers Beach on the mainland. Japanese knotweed has been found on Raspberry Island. NPS staff are working on controlling the spread of all of these species.

A number of other nonnative species of concern occur in the park and new invasive species are found nearly every year, especially in areas with new development or disturbance. Examples include Canada thistle (*Cirsium arvense*), crown vetch (*Coronilla varia*), glossy buckthorn (*Rhamnus frangula*), tansy (*Tanacetum vulgare*), burdock (*Arctium minus*), and orange hawkweed (*Hieracium aurantiacum*). Invasive species that are of especially high concern if they become established in the park include garlic mustard (*Alliaria petiolata*), which invades forested areas, and lyme grass (*Leymus archarius*), which invades dune areas and replaces native beach grass.

Vegetation and People

As noted previously, the vegetation of the Apostle Islands National Lakeshore has been substantially altered by people. There is little information on the influence of American Indians on the northern hardwood forest of the Apostle Islands, but it appears to have been minimal. Most of the islands and the mainland have a history of logging. In the late 1800s white pine was harvested, followed by the removal of large hemlocks, yellow birch, and sugar maple until nearly all virgin stands were harvested by 1950. A wide range of species were harvested from a number of islands until the 1970s. As a result of logging, white pine, hemlock, and white cedar are examples of species that have been greatly reduced in relative importance on 15 of the islands and the mainland due to logging and fires that followed logging (NPS 1999a). Logging and fires also were followed by regeneration of early successional species, which created habitats attractive to deer and beaver. Increases in deer and beaver populations affected the mainland and islands' vegetation. In particular, Canada yew was practically extirpated from several of the islands (NPS 2005a).

Other human activities on the islands, including farming, the building of cabins, quarrying, development of roads, and fish camps, also altered vegetation in the park. Today, the majority of the islands and the mainland support a forest ecosystem quite unlike what would have prevailed had there been no human activity in the 19th and 20th centuries (NPS 1999a).

Although sandcape vegetation is resistant to natural disturbances, it is particularly sensitive to human use and is easily altered by trampling during the growing season. Historical disturbances of the sandscapes include construction and use of cordwood docks, logging camps, cabins, boat docks, and sand mining. The cusplate forelands of Ironwood, Otter, and York islands were used as ramps during logging operations and as a result were heavily impacted. Since the park

was established, visitor use also has affected the sandcape vegetation. Sandscapes receive relatively high visitor use due to their accessibility and scenery. The result is that vegetation of several spits and beaches has been heavily impacted by human trampling (NPS 1999a). Monitoring has indicated degradation of vegetation on several of the park's sandscapes. Studies have documented declines in vegetative cover on sandscapes at Bear, Oak, and Long islands in 2004, and on Cat Island and Michigan Island sandspits in 2005 (NPS 2007a). The vegetative community on the Oak Island cusplate foreland has seen a lot of disturbance because of its long history of human use and current visitor use. However, since 2000 work has been underway to restore Oak Island's sandcape, including planting native plants, controlling nonnative species, and installing floating boardwalks to help direct and minimize visitor impacts (Van Stappen 2003). Sandcape restoration has also taken place on South Twin, Raspberry, Cat, and Stockton islands.

Campsite use also has affected vegetation in localized areas on the islands. The percent of bare ground, and loss of vegetation, increased at six campsites on Stockton Island in 2004, and exceeded the limits of acceptable change; an additional site was approaching this threshold. Four other campsites on the islands (two on Oak, one on Outer, and one on Basswood) exceeded the limits of acceptable change in 2002 and 2003. All of these sites are in need of site restoration (NPS 2007a).

In the past there has been a serious problem in parts of the park with the introduction of nonnative species where there has been construction. Any project that has brought in soil or gravel has introduced invasive nonnative species such as spotted knapweed (J. Van Stappen, Apostle Islands National Lakeshore, pers. comm., September 2008). Communities at high risk of impact from nonnative invasive species include wetlands and sandscapes. In addition, nonnative species such as garlic mustard (*Alliaria petiolata*), if introduced, could seriously impact forested areas. NPS staff have been

working for several years to control the spread of these species. Monitoring for spotted knapweed on the park's sandscapes is conducted annually. Monitoring and control efforts for spotted knapweed have taken place at Meyers Beach, Stockton Quarry Bay, Little Sand Bay, and the north end of Outer Island. Purple loosestrife control and monitoring is done on Long Island, Japanese knotweed control is done on Raspberry Island, and orange hawkweed has been controlled on Oak and South Twin sandscapes.

The gypsy moth (*Lymantria dispar*) has been spreading westward across the country and recently has greatly increased in numbers in the park. Based on monitoring in 2007 and 2008, these nonnative insects are widespread throughout the park, occurring on all islands where monitoring occurred (NPS 2007e and J. Van Stappen, Apostle Islands National Lakeshore, pers. comm., October 8, 2010).

Since the rapid increase of gypsy moths seems to be centered on the islands and not the mainland, it is possible they were introduced by campers bringing firewood to the islands. Gypsy moths feed on the foliage of hundreds of species of plants, but its most common hosts are oaks and aspen. When moth densities reach very high levels, trees may become completely defoliated. Several successive years of defoliation, together with contributions by other stress factors, can result in tree mortality.

Although it has not yet been discovered in the park, the emerald ash borer (*Agrilus planipennis*) is another nonnative insect that is in Wisconsin and may invade the park. If it does enter the park, this nonnative beetle will likely kill the park's ash trees.

Climate change also will affect the park's vegetation in the future, although the rate and magnitude of specific vegetation changes are not known. Forest species composition will change. Apostle Islands National Lakeshore is on the southern fringe of the boreal forest ecosystem. Scientists believe that with an

increase in annual temperatures, the park's forest will change from a northern hardwood/boreal mix to more southern species. Cool-adapted tree species such as sugar maple and paper birch are projected to lose habitat in the northeastern U.S., while oaks and pines may see an expansion. Thus, the boreal forest elements of the park will likely be diminished or lost. Also, many of the park's rare arctic remnant plants (e.g., butterwort, arctic primrose) would be expected to be affected by climate change. (Monitoring indicates that the park's butterwort populations may already be declining [J. van Stappen, Apostle Islands National Lakeshore, pers. comm., February 8, 2008]). Mountain cranberry (*Vaccinium vitis-idaea*) is another northern species, listed as endangered by the state, that may disappear if the forest surrounding it matures and the canopy becomes more dense due to climate change. Warming temperatures also are expected to increase problems related to insects and disease, such as noted above for the gypsy moth, and increase the potential for fire (Schramm and Loehman 2010; Union of Concerned Scientists and the Ecological Society of America 2005).

WILDLIFE

A variety of wildlife species use the many habitat types present in Apostle Islands National Lakeshore. Island environments, naturally isolated, are a barrier for distribution of some animals. The Apostle Islands were covered by Lake Superior during the end of the last glacial period (11,500 years before present). When the lake level dropped to 450 feet above sea level, around 9,500 years before present, the current archipelago was part of the mainland and the majority of terrestrial vertebrates and plant life became established. Inconsistencies in vertebrate distribution indicate that other factors were operating. Mobile species may have colonized some of the islands by swimming (e.g., deer, bear, beaver) or by crossing winter ice (e.g., deer, red fox, coyote) (Anderson and Stowell 1985). Other species may have been intentionally or

unintentionally brought to the islands by humans. Transportation of hay to the islands for work animals and livestock related to logging and farming activities may have been infested by meadow voles, woodland deer mice, and garter snakes (Meierotto 1976).

Thirty-four species of mammals are known to occur in the park; twelve additional species are probably present but have not been verified. However, the islands in the park have a lower diversity and abundance of mammals compared to the mainland unit—approximately 25% more species are found on the mainland unit than on the islands (NPS 2005a). Large mammals are not common on most of the islands and tend to be transient. Mammals that are common to most islands include red squirrel (*Tamiasciurus vulgaris*), snowshoe hare (*Lepus americanus*), deer mouse (*Peromyscus maniculatus*), masked shrew (*Sorex cinereus*), and boreal redback vole (*Clethrionomys gapperi*). Other species, such as black bear and white-tailed deer, are locally common on certain islands. Red fox (*Vulpes vulpes*) are believed to be fairly widespread in the park. Coyote (*Canis latrans*) are abundant on the mainland unit year-round, and have been observed on 10 of the islands.

Some common mainland species that are less mobile or dormant in the winter (e.g., gray squirrel (*Sciurus carolinensis*), least chipmunk (*Tamias minimus*), porcupine (*Erethizon dorsatum*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), and possibly some species of amphibians and reptiles, are not present on the islands. However, Long Island, currently a barrier spit rather than an island, contains most species that occur on the mainland. Species that may rarely occur in the park, or occur in very small numbers, include mink (*Mustela vison*), bobcat (*Lynx rufus*), river otter (*Lutra canadensis*), timber wolf (*Canis lupus*), and fisher (*Martes pennanti*). Although river otter have not been trapped in the park, there have been signs of otter on Michigan, Outer, Sand, and Stockton islands (NPCA 2007). Muskrat (*Ondatra zibethicus*) habitat is present on the mainland at Sand

River and the lagoons of Michigan, Outer, and Stockton islands, but little is known about the current muskrat population in the park (NPS 2007c).

White-tailed deer (*Odocoileus virginianus*) were either absent or in very low numbers on the islands prior to European settlement (Anderson and Stowell 1985, 2007c). Deer numbers increased on the mainland due to habitat modification from logging and deer began colonizing some of the islands. Habitat changes on the islands due to logging and subsequent fires resulted in deer irruptions on many of the islands, with populations peaking in the early to mid-1950s. But by the early 1960s deer decreased to low numbers due to overbrowsed and deteriorating habitat, severe winters, starvation, and liberal hunting quotas. Historically Devils, Eagle, Gull, North Twin, Outer, and Raspberry islands have not had deer populations; as of 2005 they were still without such populations. Reproducing populations are currently limited to Basswood, Oak, Sand, and York islands. A reproducing population of deer was not known on Sand and York islands until the last few years and their numbers increased rapidly, threatening the rare Canada yew plant community. Intensive efforts to reduce deer numbers on these islands is currently taking place.

The absence of deer on many of the park's islands is noteworthy. Dr. Donald M. Waller of the University of Wisconsin pointed out the following:

Landscapes like those in the Apostle Islands without deer have become vanishingly scarce elsewhere in the upper Midwest and, indeed, throughout North America.... Unbrowsed vegetative communities in the Apostle Islands represent a unique resource with national and international significance. They provide a living baseline record for understanding the pervasive impacts deer are having elsewhere and an ongoing laboratory for comparative research. Deer populations have been chronically

overabundant in the region for >20 years.... Islands without deer, and those that have variable histories of deer occupation and use, provide a priceless 'living laboratory' for us to understand the deer impacts. The Apostle Islands provide, in particular, a 'natural experiment' into the short- medium- and long-term impacts of deer browsing and thus a setting for evaluating the cascading effects of this 'keystone' herbivore (NPS 2007c).

Deer also are present on the mainland unit. A small portion of the Sand River deer yard, where deer overwinter, is in the park; this is one of several such yards along the Lake Superior coast of Wisconsin.

Similar to deer, beaver (*Castor canadensis*) were probably present in the park in small numbers prior to European settlement of the area. Their populations also peaked following logging, especially on Outer and Stockton islands, but have since the later 1970s been in a steady decline. On Outer Island, beaver have declined rapidly in recent years, decreasing from 24 active beaver lodges to one lodge between 1994 and 2005. On Stockton Island there have been few active beaver lodges since 1994, apparently due to bear predation. Other islands where beaver have occurred include Basswood, Cat, Devils, Long, Michigan, Oak, and Sand (NPS 2007c).

Resident black bears (*Ursus americanus*) exist on the mainland unit. Stockton, Oak, and Sand islands are the only islands with a known reproducing black bear population. Bears have overwintered and/or occasionally been seen on a number of other islands, such as Basswood, Long, Ironwood, Manitou, Hermit, and Raspberry. However, bears are good swimmers and potentially can be found on any island—transient bears have been observed on 14 of the 21 islands. The park's black bear population is currently concentrated on Stockton, Sand, and Oak islands and the mainland unit (NPS 2007c). Black bears on Stockton Island were studied and monitored from 1984 to 1994. This island

population increased significantly from 1984 to 1994 to a density of 2.1 bears per square mile. (In 1990, the greatest population density estimated for mainland Wisconsin was 1.0 bear per square mile.) The bear population on Stockton Island grew from a population of three animals in 1984 to a peak of 31 in 1994 (Fleming 1997). Their population remained high (26) in 2002. Based on a DNA analysis of hair, there is relatively high genetic variability in the island populations, but three distinct populations have been found—Stockton, Oak, and mainland (Belant, Van Stappen, and Paetkau 2005). Berries are an important food source, which is locally abundant around the Stockton tombolo and other open areas (e.g., bogs, sandscapes). Mast production of acorns is probably locally abundant in good years on Oak and Long islands (NPS 2005a).

Surveys in 2001–2007 found signs of river otter on Outer, Stockton, Michigan, and Sand islands. The occurrence and abundance of otter sign on Sand, Outer, and Michigan islands was related to beaver ponds, interior open water habitats, and lagoons (NPS 2007c).

Six species of bats were recorded in a 2003 survey in the park: little brown bat (*Myotis lucifugus*), northern Myotis (*Myotis septentrionalis*), eastern red bat (*Lasiurus borealis*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), and big brown bat (*Eptesicus fuscus*). The bats were observed on Devils, Outer, and Stockton islands and the mainland unit. The park's sea caves might provide summer roosting habitat for area bats, although the extent of use by bats is not known (NPS 2007a, Kruger and Peterson 2008).

Due to its strategic geographic location and wide diversity of habitats, Apostle Islands National Lakeshore provides a refuge for birds. Through the park's long-term monitoring program for forest breeding birds, approximately 150 species of birds have been recorded (NPS 2007a). The islands provide important habitats for resident breeding birds as well as neotropical migrant land birds

(birds that migrate to Central and South America in winter). Over 89% of the breeding birds in the park are migrants, 59% of which are neotropical migrants.

The Apostle Islands are an important migratory flyway stopover in the Great Lakes region. Passerines, hawks, falcons, waterfowl, and shorebird species all stop in the park. Surveys indicate that 230 species move through the archipelago during the fall migration (NPS 2005a). Nearly all of the islands provide habitat for migrating birds. In particular, Outer and Long islands provide key habitats for migratory birds; Outer Island is important for passerines, hawks, and falcons, and Long Island is important for waterfowl, passerines, and shorebirds. Migratory bird surveys conducted on Outer and Long islands have recorded over 200 species (NPS 2007a).

The park provides nesting habitat for six species identified by the Partners in Flight *North American Landbird Conservation Plan* (Rich et al. 2004) as having “continental importance” in the Northern Forest Avifaunal Biome: Canada warbler (*Wilsonia Canadensis*), chestnut-sided warbler (*Dendroica pensylvanica*), alder flycatcher (*Empidonax alnorum*), swamp sparrow (*Melospiza Georgiana*), Nashville warbler (*Vermivora ruficapilla*), and black-throated green warbler (*Dendroica virens*).

The park provides important nesting habitat for the following colonial nesting birds: herring gulls (*Larus argentatus*), double-crested cormorants (*Phalacrocorax auritus*), great blue herons (*Ardea herodias*), and cliff swallows (*Petrochelidon pyrrhonota*). The importance of Eagle and Gull islands for nesting by gulls and colonial waterbirds was recognized by the state of Wisconsin when it designated the Apostle Islands Critical Species State Natural Area in 1992. Eagle Island has the only great blue heron rookery in the park. Gull and Eagle islands combined have 80% of the herring gull breeding population on the entire Wisconsin shore of Lake Superior (NPS 1999c). However, the number of nesting pairs

of herring gulls and double-crested cormorants decreased between 1999 and 2009.

Bald eagles (*Haliaeetus leucocephalus*) began recolonizing the Apostle Islands in the early 1980s, and young have been produced annually since 1983. The number of occupied nests in the archipelago has been increasing since 1980. Nests have been reported on 15 islands and on the mainland at different times. A total of 147 nesting attempts occurred between 1980 and 2005, with 83 successful nests. In 2007, ten nests were initiated; more than ten chicks were successfully fledged from seven nests (J. Van Stappen, Apostle Islands National Lakeshore, pers. comm., October 16, 2007). However, nest productivity still remains below levels found on the mainland. Research (1991-1993) indicates that lowered productivity is primarily due to a low food base and the continuing presence of anthropogenic toxic chemicals in Lake Superior (Meyer et al. 1994; NPS 1999c). In June 2007, the bald eagle was removed from the federal list of threatened and endangered species. It is still, however, afforded protection under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act.

Six species of salamanders, ten species of frogs and toads, and six species of reptiles are known to occur within the park, including the islands (Casper 2001 as cited in NPS 2007b). The most common species of salamander are blue-spotted (*Ambystoma laterale*), spotted (*A. maculatum*), and eastern red-backed (*Plethodon cinereus cinereus*). The four-toed salamander (*Hemidactylium scutatum*) and central newt (*Notophthalmus viridescens louisianensis*) are regionally uncommon, and mudpuppies (*Necturus maculosus maculosus*) are locally common. Frogs and toads that occur in the park and are regionally common include: eastern American toad (*Bufo americanus americanus*), northern spring peeper (*Pseudacris crucifer crucifer*), eastern gray tree frog (*Hyla versicolor*), green frog (*Rana clamitans*), northern leopard frog (*R. pipiens*), mink frog (*R. septentrionalis*), and wood frog (*R. sylvatica*). Chorus frogs

(*Pseudacris* sp.) are regionally local, Cope's gray treefrogs (*Hyla chrysoscelis*) are regionally rare, and American bullfrogs (*R. catesbeiana*) are regionally uncommon. The park has a rather depauperate turtle fauna, with only two species, painted turtle (*Chrysemys picta*) and snapping turtle (*Chelydra serpentina*). The most abundant snakes in the park are common garter snakes (*Thamnophis sirtalis sirtalis*). Other snake species that are present include northern redbellied snake (*Storeria occipitomaculata occipitomaculata*), northern ring-necked snake (*Diadophis punctatus edwardsii*), and smooth green snake (*Opheodrys vernalis*) (Casper 2001a and 2001b; NPS 2007b).

A variety of moths and some butterflies (Lepidoptera) have been identified in the park. Ninety-eight species were identified in a 1996 inventory on a dune locality on Long Island, while a 2000 survey recorded collectively a total of 174 species (Ferge 2001; J. Van Stappen, Apostle Islands National Lakeshore, pers. comm., October 16, 2007). Most of the species documented were moths.

The park's enabling legislation permits hunting, fishing, and trapping. A "Wildlife Management Plan and Environmental Assessment for Harvestable Species" was recently completed (NPS 2007c). The plan provides guidance for the management of hunting and trapping within the park, but does not address fishing. It also does not affect tribal members' treaty-reserved rights to hunt, trap, and fish within the park. Changes to the management of harvestable species primarily affect the harvest of deer. The plan expands harvest opportunities for deer, while focusing on providing a primitive type of experience. The plan also specifically recognizes islands that have a unique vegetation community due to a lack of deer browse and provides for management control, when needed. Species that may be hunted and trapped in the park include deer, black bear, fox, coyote, beaver, otter, mink, fisher, muskrat, snowshoe hare, waterfowl, woodcock (*Scolopax minor*), and ruffed

grouse (*Bonasa umbellus*). Although the park supports several furbearer species, the populations tend to be small and somewhat transient. Most of the islands are too small to support furbearer populations such as fisher and otter (NPS 2007c). Hunting and trapping on the islands has tended to be low, in part due to difficult access and fairly low population numbers of most species.

Climate change will likely affect the park's wildlife populations, although as noted previously it is difficult to predict the rate and magnitude of change to specific wildlife populations. It is known that bird species migration timing and ranges are changing due to climate change, and that changes in climate are having significant effects on breeding and winter distribution of birds in North America. Some northern birds that are on the edge of their range in the park may disappear, while other birds may expand northward into the park. Food sources may be reduced for long-distance migratory birds such as warblers, thrushes, and flycatchers. There is a risk that the delicate timing between the arrival of migrating birds and the availability of their food supply may be disrupted, as has been documented in other areas (Union of Concerned Scientists and the Ecological Society of America 2005; Root et al. 2005). Some resident mammal species such as white-tailed deer, raccoons, and skunks, may benefit from climate change due to milder winters and consequently reduced winter mortality. Other species, such as wood tick (*Dermacentor variabilis*), wild turkey (*Meleagris gallopavo*), and flying squirrel (*Glaucomys* sp.), may extend their ranges and/or increase in numbers in the park. Longer mosquito and black fly seasons will also likely occur (Schramm and Loehman 2010; NPS 2007g; Union of Concerned Scientists and the Ecological Society of America 2005). Cold water fish species in Lake Superior, such as lake trout (*Salvelinus namaycush*) and whitefish (*Coregonus clupeaformis*), are likely to be adversely affected as the lake's mixing season lengthens and the depth of the increasingly warm

surface water layer expands. Cool water fish species, such as bass (*Micropterus sp*) and crappie (*Pomoxis nigromaculatus*), may increase.

THREATENED AND ENDANGERED SPECIES

Piping Plover

The park provides nesting habitat for piping plover (on the federal and state endangered list). The Great Lakes population of piping plovers (*Charadrius melodus*) was listed as endangered by the state of Wisconsin in 1979 and by the U.S. Fish and Wildlife Service as endangered in 1985. Piping plovers need large undisturbed beaches that are wide, sandy, flat and open, and have very little grass or other vegetation. Plovers are very site tenacious and return year after year to the same nesting territory. The birds are easily disturbed in May through July when they are nesting and raising young. Birds can be scared away from potential breeding areas when they are establishing nesting territories in May. Likewise, if disturbances cause adults to be off their nests for very long in June, when they are nesting, their eggs will not survive.

In Apostle Islands National Lakeshore critical habitat for piping plover has been designated by the U.S. Fish and Wildlife Service on Long Island and the Michigan Island sandspit. Piping plovers are protected in the park through the joint efforts of the National Park Service, Wisconsin Department of Natural Resources, the Bad River Tribe, U.S. Fish and Wildlife Service, University of Minnesota researchers, and volunteers. To protect any nests that are found in the park, an area approximately 100 meters square is posted closed to the public and an “exclosure” or fence (approximately 4 meters in diameter) is placed around the nests to help prevent predation. The nests are also monitored. Long Island and Outer Island are the only locations where piping plovers have successfully nested in the state of Wisconsin in recent years. In 2006, three nests on Long Island were successful, producing a total of

five fledglings. In 2007, a total of thirteen young were produced on Long Island and two young were produced on Outer Island. In 2008, a total of five nests were on Long Island, of which three nests successfully fledged six young. In 2009 there were four successful nests and eight young; in 2010 there were two successful nests and seven young. Predator control activities were conducted in 2009 and 2010 to protect the plovers’ nests.

Gray Wolf

Wolves (*Canis lupus*) occurred throughout Wisconsin prior to European settlement. Although estimates vary, the statewide estimate is believed to have been between 3,000 to 5,000 animals (Wydeven 1993 and Jackson 1961, as cited in NPS 2007c). It is not known if wolf packs were ever established or the extent to which they used the park. A state bounty program that lasted from 1865 to 1957 resulted in the extirpation of gray wolves in Wisconsin by the late 1950s (Thiel 1993 as cited in NPS 2007c). A combination of factors, including the elimination of the bounty program in Wisconsin, Michigan, and Minnesota, as well as protection under the Endangered Species Act, allowed wolves to recolonize Wisconsin in the mid 1970s (Wydeven et al. 1995 as cited in NPS 2007c).

The gray wolf was listed as a federally endangered species in 1967 and a Wisconsin state endangered species in 1975. With an increase in the state’s wolf population, the federal and state status of wolves in Wisconsin has changed several times since then. In 2004, the gray wolf was removed from the state’s endangered species list and listed as a protected wild animal. Most recently, in July of 2009, wolves in Wisconsin were relisted as federally endangered.

Wolves generally occur in large landscapes with adequate prey populations and low rates of human persecution (Fuller 1995 as cited in Wisconsin DNR 199). A study in the early 1980s showed that the diet of Wisconsin wolves was comprised of 55% white-tailed deer, 16% beavers, 10% snowshoe hares and

19% mice, squirrels, muskrats and other small mammals. Deer comprise over 80% of the diet much of the year (WI DNR 2009). The average territory for an adult wolf in Wisconsin is 37 square miles (Wydeven and Wiedenhoft 2005).

In 2009, a minimum of 626 to 662 wolves were estimated to occur in the state (Wydeven et al 2009). Total occupied range occupied by territorial wolves during winter was estimated at 7,008 square miles, which indicated that most of the state's primary habitat has been filled and wolves were spreading into secondary habitat (Wydeven et al 2009).

A pack of wolves currently use the northern part of the Bayfield Peninsula. Although these wolves do not live permanently in the park, they use a portion of the park, especially in the winter. There have been wolf sign and sightings in and adjacent to the park, particularly on the mainland unit from Sand Point to Meyers Road (NPS 2005a; NPS 2007c). There have also been recent sign and sightings of a couple of wolves on Sand Island. Sand Island is only approximately 10% the size of an average wolf pack's territory. Because the park is divided into 21 islands and a small mainland unit, the park can only provide transient habitat for wolves. Food availability is most likely an additional limiting factor (NPS 2007c).

NATURAL SOUNDSCAPE

Soundscapes include both natural and human components. Natural soundscapes include all naturally occurring sounds such as waves on the shoreline, running water, bird calls, wind blowing through trees, or thunder. It also includes "natural quiet" that occurs in the absence of natural or human-caused sound. The opportunity to experience natural sounds/quiet is an enjoyable part of some visitor experiences at Apostle Islands National Lakeshore.

Much of Apostle Islands National Lakeshore is considered to be a relatively quiet place.

Away from visitor facilities on the mainland unit and the islands, most of the sounds heard in the interior of the park is due to the waves of Lake Superior crashing on the shoreline, the wind blowing through trees, and wildlife calls (e.g., birds). The most common human-caused sounds are from motorized watercraft and other vessels. Other human-caused sounds include vehicle noise (e.g., vehicles on roads on the mainland, depending on wind direction), human voices, radios, and other sounds generated by people picnicking and camping. At major developed areas, like the Stockton Island – Presque Isle campground, and the visitor facilities at Little Sand Bay and Meyers Beach, noise from vehicles and people is frequently heard. Noise from logging operations can sometimes be heard in the mainland unit. Urban sounds from Bayfield can occasionally be heard in the park. Occasional human voices are also heard in the wilderness area. Human sounds are not unexpected or inappropriate in the nonwilderness portion of the park, but are part of the overall soundscape in an area where water activities, picnicking, camping, and other recreational uses are part of the visitor experience in the park.

Winters generally are much quieter in the park, when there are fewer people present, than the summer. Depending on the winter and ice conditions, the sounds of snowmobiles passing by may be periodically heard.

Probably the loudest and most frequently heard noise on the islands is from motorized watercraft either passing by or landing at the islands. On most days during July and August, noise from the concessioner's tour boat is evident at both the islands that the boat visits and the islands that it passes by. Noise related to motorized watercraft is highest during the summer. Outboard motors with underwater exhaust systems typically generate around 75 to 85 A-weighted decibels (dBA) during full throttle pass-bys at 50 feet (Lanpheer 2000). However, the noise level of inboard/outboard boats can range widely, depending on the exhaust system, from below 80 dBA to 105

dBA or more (Lanpheer1987; Sea Doo 2000). For comparison, a power lawnmower at 25 feet typically ranges from approximately 75 to 80 dBA (Noise Pollution Clearinghouse 2004), which is considered by many to be very loud. (See table 13 for a comparison of noise generated by various sources.)

Personal watercraft and cigarette boats occasionally pass by the islands outside the park and contribute noise in the summer. From 2005 through 2007, a “poker run”—a powerboat rally primarily consisting of fast cigarette boats—occurred outside of the park

boundary, near several islands. This rally generated considerable noise and was very controversial.

In addition to affecting visitors, noise in and outside the park also may affect wildlife. Many animals depend on acoustic communication for finding food, avoiding predators, establishing territory, courting and mating, and nurturing young. Depending on such factors as the intensity, frequency, and duration of the noise, wildlife behavior can be affected (Knight and Gutzwiller 1995).

Table 13: Common Noise Levels and Their Effects on the Human Ear

Source	Decibel Level (dBA)	How it Feels (Subjective Impression) / Effect
Leaves rustling at Canyonlands National Park	20	Just audible
Soft whisper, quiet library (15 feet)	30	Very quiet
Bedroom or quiet living room, bird calls	40	
Conversational speech (3 feet [1 meter]), 4-stroke snowmobile (30 mph at 50 feet), automobile (45 mph at 100 feet)	60	Comfortable hearing levels are under 60 dB
Personal watercraft (at 82 feet [25 meters])	68 - 76	
Vacuum cleaner, hair dryer, 2-stroke snowmobile (30 mph at 50 feet)	70	Intrusive; interferes with telephone conversation
Recreational vehicles, TV	70 - 90	85 dB is the level at which hearing damage (8 hours) begins
Outboard motor with underwater exhaust system (at 50 feet)	75-85	
V8 "muscle" boat (cigarette boat) (at 82 feet [25 meters])	85 - 86	
Heavy truck or motorcycle (25 feet)	90	No more than 15 minutes of unprotected exposure recommended for sounds between 90 – 100 dB
Jet flyover	103	Very loud

SOURCES: Kormanoff and Shaw 2000; traffic noise background information (www.drnoise.com/PDF_files/Traffic%20Noise%20Primer.pdf); NPS 2007d; Lanpheer 2000; and Vicki McCusker, NPS natural soundscape program, pers. comm. July 19, 2007.

WILDERNESS CHARACTER

The Gaylord Nelson Wilderness in Apostle Islands National Lakeshore was established by Congress on December 8, 2004, with the passage of PL 108-447, section 140. The wilderness area encompasses about 80% of the land area of the park (approximately 33,500 acres of the park's 42,160-acre land base). The wilderness area encompasses all of Bear, Cat, Eagle, Gull, Hermit, Ironwood, North Twin, and York islands; 99% or more of Manitou, Oak, Otter, Outer, and South Twin islands; 97% of Raspberry Island; 96% of Michigan Island; 95% of Rocky Island; 94% of Devils Island; and 93% of Stockton Island (see figure 3). The waters of Lake Superior within the park are not included in the wilderness area, nor are the lighthouses or other existing developed areas of the park. Sand, Basswood, and Long islands and the 12-mile mainland strip, also are not part of the wilderness area. The boundary of the wilderness area immediately adjacent to Lake Superior is defined as the variable "high water mark," which keeps the boundary from ever extending into the lake; this allows beaching of boats in both high and low water years. Thus the practice of anchoring boats near the islands is unaffected by the wilderness designation, since the wilderness boundary will never include any portion of Lake Superior.

The Wilderness Act speaks of wilderness as a resource in itself. A wilderness, in contrast to those areas where humans dominate the landscape, is defined by the qualities comprising its wilderness character. Wilderness character encompasses a combination of biophysical, experiential, and symbolic elements as described by four principal qualities: natural, undeveloped, untrammeled, and having outstanding opportunities for solitude or a primitive and unconfined type of recreation. These four

qualities are of equal importance and can be defined in the following ways.

NATURAL

The Wilderness Act states that wilderness is "protected and managed so as to preserve its natural conditions." In short, wilderness ecological systems are substantially free from the effects of modern civilization. This quality can be degraded by intended or unintended effects of modern people on the ecological systems inside the wilderness after the area is designated (Landres et. al 2008).

To most visitors, the Gaylord Wilderness appears to be natural, covered largely by natural-looking forest vegetation. Although most of the lands comprising the wilderness area were at various times logged, quarried, farmed, or otherwise used by humans in a multitude of ways, these activities ceased for the most part either before or just after the park was established in 1970. Since that time, and for considerably longer on some islands, the vast majority of the wilderness area's lands have been left to the forces of nature. Today there is no permanent human presence in the wilderness area, and the signs of past human activity are generally no longer visible. From an overall perspective (and compared to most of the country), the wilderness area is relatively free from the effects of people. Thus, the natural character of the wilderness area is mostly preserved today.

UNDEVELOPED

The Wilderness Act states that wilderness is "an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation..." "...where man himself is a

visitor who does not remain” and “with the imprint of man’s work substantially unnoticeable.” This quality is degraded by the presence of structures, installations, habitation, and by the use of motor vehicles, motorized equipment, or mechanical transport that increases people’s ability to occupy or modify the environment (Landres et al. 2008).

Although roads existed on many of the islands, mainly to support logging activities or the lighthouses, virtually none of them are maintained as roads at this time. Some of these former roads are maintained as hiking trails, but most are completely overgrown, and it now requires a rather discerning eye to note where they may have been.

Other forms of development in the wilderness area are also relatively sparse. People no longer reside year-round on any of the islands. Some former cabins, farm clearings, and fishing and logging camps are reverting to more natural conditions. Hiking trails and campsites are present, as are some historic structures, but for the most part they are consistent with the Wilderness Act and NPS wilderness management policies—little if any noticeable human imprint is present in much of the wilderness area other than these developments.

UNTRAMMELED

The Wilderness Act states that wilderness is “an area where the earth and its community of life are untrammelled by man,” and “generally appears to have been affected primarily by the forces of nature.” In short, wilderness is essentially unhindered and free from modern human control or manipulation. This quality can be degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness (Landres et al. 2008).

The vast majority of the wilderness area is untrammelled. However, trammeling activities

have occurred in the past, and some activities continue to occur, including control of nonnative species and management of deer on the islands. Active restoration activities also occur on some sites, such as the sandscapes.

SOLITUDE OR A PRIMITIVE AND UNCONFINED TYPE OF RECREATION

The Wilderness Act states that wilderness has “outstanding opportunities for solitude or a primitive and unconfined type of recreation.” This quality is about the opportunity for people to experience wilderness; it is not directly about visitor experiences per se. This quality can be degraded by elements that reduce these opportunities, such as visitor encounters, signs of modern civilization, recreation facilities, and management of or restriction on visitor behavior (Landres et al. 2008).

There are opportunities for primitive, unconfined recreation on every island in the wilderness area, including opportunities for hunting, fishing, hiking, backpacking, wildlife watching, and snowshoeing. Camping opportunities are available on 15 of the 18 islands in the wilderness area. There is a total of approximately 38 miles of hiking trails on the islands in the wilderness area. It is not known how many visitors make use of the trails, but the opportunities are numerous.

Except for camping, which requires a permit, recreation on the islands is largely unconfined. A small number of areas are closed during the main visitor season to protect nesting bird populations, but access to and recreation on most of the islands is unregulated.

The Gaylord Nelson Wilderness has many opportunities for solitude. The wilderness area is relatively quiet, with natural sounds dominating the soundscape for much of the year (with the exception of noise from motorized watercraft). Except during peak visitor use months of June through August, very few people visit the islands—and most of

those who do visit them do not go into the wilderness area or do not spend much time there. The islands are logistically challenging to reach and the visitor season is relatively short. The majority of the shorelines are steep or rocky, making access difficult or impossible in many areas. There are a few places where relatively large groups of people (10-30+) may gather at one time in the wilderness area, particularly on weekends and holidays; these places are the Oak Island group campsite and nearby sandspit, the beach at the southeast side of Raspberry Island, and the beach on the north side of York Island. Other areas on the islands that receive high use levels, including

dock areas, lighthouses, and group camping areas, are all outside the wilderness area. Due to the combined influences of beach, campsite, and dock locations, there is a very strong tendency for park visitors to stay near shorelines. Other factors, such as insect populations, probably contribute to this tendency as well. In any case, for those visitors willing to venture into them, the interiors of the islands offer outstanding opportunities for solitude—even during the peak visitor season. On many islands, it is possible to walk for miles without encountering another visitor. Most of the sounds of civilization give way to the sounds of the forest after traveling only a short distance inland.

CULTURAL RESOURCES

HISTORIC STRUCTURES / CULTURAL LANDSCAPES

The following thematic summary of historic sites, structures, and cultural landscape features highlights the national lakeshore's diverse array of light stations and other historic properties associated primarily with tourism and recreation, commercial fishing, farming, quarrying, and logging. Seventeen of these properties are listed in the National Register of Historic Places, and 158 structures are listed in the national lakeshore's list of classified structures (LCS). As feasible, NPS staff of the national lakeshore carry out preservation undertakings and ongoing maintenance of these historic structures, often incurring the added expenses and difficult logistical challenges of transporting staff, materials, and equipment from the mainland to the islands and remote site locations.

Although the Raspberry Island light station has recently received the most extensive preservation treatment with rehabilitation/restoration of its light tower and keeper's quarters, the national lakeshore has completed numerous other preservation projects at other light stations and historic properties over the last 10 years. These undertakings have included reroofing, repointing, painting, foundation drainage rehabilitation, structural reinforcement, and other repairs at selected light station buildings (Devils Island, Long Island, Michigan Island, Outer Island, Raspberry Island, and Sand Island). Various preservation and stabilization activities also have been completed for buildings of the Hokenson fishery and the Manitou fish camp. The national lakeshore is committed to carrying out (at a minimum) preservation and stabilization of its significant historic structures and cultural landscape features, with the intent to carry out more

extensive rehabilitation and restoration activities as funding allows and as appropriate guidance documentation (e.g., historic structure reports and cultural landscape reports) is completed.

According to the NPS "Cultural Resources Management Guideline" (NPS/DO-28), a cultural landscape is

a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

Several of the national lakeshore's historic sites have associated cultural landscapes, although detailed inventories and reports are required for many of these landscapes to more fully identify contributing features and provide baseline information to support treatment recommendations. Cultural landscapes with varying degrees of integrity are associated with the national lakeshore's light stations, fishing and logging camps, quarries, farms, and former recreational resorts. Ethnographic landscapes may also be identified through future investigations.

Some of the cultural landscape features are relatively easy to observe (e.g., outbuildings and foundations, paths and roads, garden areas), while in other cases landscape features are obscured by encroaching forest vegetation and are more difficult to discern. Because of the close association of cultural landscapes to historic sites and structures at the national

lakeshore, these topics are presented together where appropriate.

Light Stations

Apostle Island National Lakeshore's light stations were constructed between 1856 and 1891 to aid navigation through this portion of Lake Superior. Renowned historian of American lighthouses, F. Ross Holland, described these properties as "the largest and finest single collection of lighthouses in the country" (Holland 1989). Five of the light stations (Michigan Island, Raspberry Island, Outer Island, Sand Island, and Devils Island) were collectively listed in the National Register of Historic Places in 1977 (NPS 1977). The La Pointe light station, on Long Island, was listed in the national register in 1983. The overall period of historic significance (1856 to 1978) reflects the 122 years from construction of the first light station on Michigan Island to the automation of the Devils Island light station and consequent departure of its U.S. Coast Guard crew.

The light stations are the most visible historic resources in the national lakeshore; they are viewed by many as icons inextricably linked to the region's cultural history. Adjoining lands that were reserved for the light stations were removed from logging and other development activities, and consequently contain some of the best preserved old-growth forest in the region. In addition to the lighthouses and keepers' dwellings, the light stations retain a substantial number of auxiliary buildings (e.g., oil houses, privies, barns, and shops) and associated cultural landscape features that provide a more complete understanding of the nature of operations and the living conditions of the keepers and their families.

Of the six light stations, the Raspberry Island light station is the only one for which a cultural landscape report and a historic structure report have been completed. The park has unsuccessfully sought funding for cultural landscape reports and historic structure reports for the other stations.

Michigan Island Light Station

The first Michigan Island lighthouse, the oldest in the Apostle Islands, was constructed in 1856 at the island's southern point. The conical rubble-stone masonry structure is about 65 feet tall with an exterior railed walkway at the top. A rubble-stone 1½-story keeper's dwelling was attached to the lighthouse as part of the original construction, with dormers added to the single-gabled dwelling in 1914. The lighthouse was put into service in 1857, but ceased operation after only one year and remained abandoned until it was refurbished and reoccupied in 1869. For reasons that are not entirely clear, the lighthouse was constructed on Michigan Island despite the U.S. Lighthouse Board's original intention to construct it on Long Island.

In 1919, efforts were made to increase the visibility of the light station. A cylindrical steel tower (built in 1880) that originally stood on the Delaware River near Philadelphia was disassembled and transported to the site on Michigan Island to replace the earlier lighthouse. However, the 112-foot-tall skeletal steel tower was not reassembled near the original lighthouse until 1929. Other improvements to the light station at this time (1928-29) included the construction of a new 2-story brick keeper's quarters, a 1½-story wood-frame assistant keeper's dwelling, a dock, and a brick building that housed an electric generator, radio fog beacon, and a hoist engine for a tramway.

The Michigan Island light was automated in 1943. The light tower's Fresnel lens was removed in 1972 and is now on display in the national lakeshore's visitor center in Bayfield. A dense stand of trees and vegetation has grown in the formerly cleared area between the light station and the shoreline, obscuring offshore views of the original lighthouse and all but the upper portion of the newer light tower. A steel light tower on nearby Gull Island (constructed in 1929 and put into operation in 1933) is considered a contributing structure of the Michigan Island light station (NPS 2002b; NPS 2005a).

La Pointe (Long Island) Light Station

The La Pointe light station consists of three distinct sites: the Chequamegon Point light, a steel skeleton-frame lighthouse at the western tip of Long Island; the new La Pointe light complex (about 4,000 feet east) with cast-iron light tower, oil house, and triplex keeper's dwelling; and the ruins of the original La Pointe lighthouse, located approximately midway between the other two and nearly obscured by dense vegetation.

The original La Pointe lighthouse, a wood-frame schoolhouse style building, was built in 1858. It was constructed in response to the U.S. Lighthouse Board's determination that the Michigan Island light station (constructed two years earlier in 1856) was unsatisfactory, and the preferred site location should be on Long Island as initially planned.

In 1896 the original lighthouse was converted to a keeper's dwelling and the tower was removed. Also at that time, a new La Pointe light tower was constructed about 1,500 feet to the east of the original site, and the Chequamegon Point light was constructed about 2,500 feet to the west. A concrete walkway linked the light houses to facilitate transport of supplies and the long walk of the keeper who operated both lights. The Chequamegon Point light and the new La Pointe lighthouse were initially equipped with fourth-order Fresnel lenses; both were replaced with fully automated navigational beacons in 1964. The altered keeper's quarters at the original site was used until 1938, when it was replaced by a new 2-story wood-frame triplex constructed with Works Progress Administration funding at the new eastern site location. The La Pointe light station was listed in the national register in 1983 (NPS 2002b; NPS 2005a).

Outer Island Light Station

The Outer Island light station was constructed in 1874 to guide ships past this extreme northern point of the Apostle Islands enroute to the growing ports of Duluth, Minnesota, and Superior, Wisconsin. The white, 90-foot-

tall brick lighthouse exhibits Italianate architectural elements that became popular in the 1860s and 1870s. It is considered a fine example of a "Poe tower" in recognition of Orlando M. Poe (chief engineer for the Lighthouse Board's 11th District from 1870 to 1873) with whom several Italianate-style lighthouses are associated. Distinctive features of the lighthouse include its iron spiral staircase, decorative brackets supporting the watch room walkway, and arched exterior windows. A large third-order Fresnel lens was installed in the lighthouse—it was removed in 1961 when the station was fully automated.

A three-story brick keeper's dwelling, with semi-hipped roof and attached shed-roofed summer kitchen, was built as part of the original 1874 construction of the lighthouse. It is attached to the lighthouse by a short passageway. Among the other structures contributing to the significance of the site are a concrete dock and breakwater, wood-frame fog signal building, oil house, and tramway with concrete steps. Because of its exposed location, the Outer Island light station has faced intense storms, which has resulted in structural loss and damage. The dock washed away during the station's first year of operation, and the original fog signal building was destroyed as a consequence of wave erosion at the base of the bluff embankment. Ongoing shoreline erosion continues to threaten the light station's structures; damage has occurred to the stairs and tramway that lead up the steep embankment from the dock. To protect the site, NPS staff has undertaken shoreline stabilization measures including the placement of riprap and revegetation to check erosion (NPS 2002b; NPS 2005a).

Raspberry Island Light Station

The Raspberry Island light station (considered the "showplace of the Apostle Islands") is the most readily accessible and most frequently visited of the Apostle Island lights. It was constructed on the southwest end of Raspberry Island in 1862 in response to increased commercial shipping underway in the 1850s that passed between the mainland

and the inner Apostle Islands. The founding of the port city of Bayfield, Wisconsin, in 1856 contributed to the ship traffic and the need for a light station in the vicinity. The station was activated in 1863 when a fifth-order Fresnel lens was installed. The original light tower was incorporated into the center of a wood-frame two-story keeper's dwelling with attached shed. The current appearance of the structure reflects significant modifications carried out in 1906, when the light tower was moved from the center of the structure to the front façade, and the former single-family dwelling was enlarged to a triplex to accommodate the keeper, assistant keepers, and their families. The former single-gable roof was modified with a red-painted metal tile hipped roof, and hipped roofs were also placed over one-story wing additions on either side of the main structure. Exterior siding is of whitewashed clapboards.

The lighthouse was occupied until 1947, when the light was converted to an automated operation and no longer required the presence of an on-site keeper. The Fresnel lens (now on display at the Wisconsin State Historical Society Museum on Madeline Island) remained in the tower until 1957. The U.S. Coast Guard replaced the lens with a battery-operated, pole-mounted beacon. A portion of the keeper's dwelling is open for interpretive tours, and a small collection of historic light station artifacts are displayed there. Although the National Park Service maintains a portion of the cleared area around the light station structures and grounds, the overall historic setting of the light station has changed; forest succession has reclaimed much of the surrounding acreage that had once been cleared to allow greater visibility of the beacon.

The light station contains a number of additional contributing structures dating from the period of original construction in the 1860s, and later site development in the early 1900s. These structures provide a more complete understanding of historic operations and the evolution of the station's cultural landscape. Among these are a brick 1½ story

fog signal building (1903), which once housed a steam engine to power the tram that delivered supplies from the dock to the light station complex. Other contributing structures include the dock and boathouse, barn/workshop, oil building, sheds, privies, concrete sidewalks and steps, and the tramway tracks. National lakeshore staff have planted gardens and ornamental flowerbeds that create a semblance of the historic landscape.

Two important studies have provided specific guidance for subsequent treatment and ongoing management of the light station. The *Historic Structure Report – Raspberry Island Lighthouse* (Quinn Evans 2000) incorporated historical and architectural investigations to support design recommendations for restoration/rehabilitation and contemporary use of the lighthouse. The historic structure report served as the primary planning document guiding preservation treatments and provided the basis for construction drawings and specifications. In a broader holistic approach, the *Cultural Landscape Report and Environmental Assessment – Raspberry Island Light Station* (NPS 2004f) analyzed the historical evolution and adaptation of the light station to the island environment, identified contributing and noncontributing landscape features, and provided recommendations for rehabilitation of the cultural landscape.

The National Park Service completed erosion control measures in 2003 in response to severe shoreline erosion and slumping of the embankment that threatened the light station structures. These measures included the placement of a rock revetment across the base of the bluff below the station, regrading the slope to a stable angle, drainage improvements to divert runoff, and revegetation to anchor the soils. A rehabilitation project was undertaken in 2006 to address structural deterioration of the lighthouse and keeper's dwelling to improve its functional use for employee housing and enhance visitor interpretation. These measures included the restoration (both interior and exterior) of the

south half of the building to its early 20th century appearance, adaptive use of the north half of the building for seasonal employee housing, water supply and electric power systems upgrades, and installation of a septic system.

Sand Island Light Station

The Sand Island light station was constructed in 1881 on the northern tip of the westernmost island in the Apostle Islands chain. The 44-foot-tall light tower and attached keeper's quarters were constructed of locally quarried brownstone in a picturesque Norman Gothic-revival architectural style. Distinctive elements include rounded arch window sashes, flared eaves, and decorative carved wood trim at the gable end of the keeper's quarters. The lower portion of the light tower is square and transitions upwards to an octagonal shape at the second floor level, surmounted by the walkway and lantern room. An original shed-roofed summer kitchen is attached to the south end of the building. A full basement and interior brick chimney are other notable elements. The building is in good condition, although the formerly cleared area around the station has rapidly revegetated (principally with balsam fir) since clearing activities were last conducted in the early 1990s.

For the first 40 years of operations, only two keepers were in charge of the Sand Island light station: Charles Lederle (1881-1892) and Emmanuel Luick (1892-1921). In 1921, an acetylene burner apparatus was attached to the beacon, making it the first among the Apostle Islands stations to be automated. Thereafter, keepers at nearby Raspberry Island were charged with monitoring the automated Sand Island beacon and refilling its fuel tanks. In 1933, the U.S. Lighthouse Service erected a 50-foot-tall steel tower in front of the lighthouse and placed the beacon on top. The original fourth-order Fresnel lens in the lighthouse was removed. The U.S. Coast Guard returned the signal to the lighthouse in 1985 and removed the steel tower. Other contributing buildings at the station are a

square brick oil house with metal hipped roof (1901) and a brick metal-roofed privy (1881) (NPS 2002b; NPS 2005a).

Devils Island Light Station

The Devils Island light station, the sixth and last station established in the Apostle Islands, was put into operation in 1891 at the northern tip of the island. Initial funding proved inadequate for the construction of a permanent lighthouse, but to avoid delays the U.S. Lighthouse Board opted for the placement of the light in a temporary wood skeleton-frame tower. The principal keeper's dwelling was completed in 1896; it is a 2½-story Queen Anne style brick house with wood-shingle, gabled roofs, extended roof line and narrow eaves, and attached rear kitchen. An assistant keeper's quarters (completed in 1897) was also constructed as a 2½-story Queen Anne style brick house with a second story bay window, molded brackets, and ornamental curved windows. These dwellings were the most spacious of all the keepers' quarters in the Apostle Islands, providing family privacy and comfortable middle-class Victorian amenities. A third wood-frame keeper's dwelling (intended for the second keeper's assistant) was removed by the Coast Guard in 1956.

A permanent steel light tower was constructed in 1898, but was not put into operation until 1901 when a third-order Fresnel lens was installed. A skeletal steel framework was added to the 82-foot-tall cylindrical tower in 1915 to brace it against high winds. Devils Island was the last manned station in the Apostle Islands, and its light tower was not automated until 1978. The original Fresnel lens is no longer operative, but remains on display in the tower. The National Park Service carried out a lead abatement project on the tower in 2003. Additional contributing structures include a one-story wood-frame fog signal building, two square brick oil buildings, pump house, tramway engine building (tramway track and tram cart are also extant), hoist house, and radio tower. Also contributing to site significance are a

boathouse, dock, and breakwater at the south end of the island. The latter structures are connected to the lighthouse area by an unpaved, approximately 1-mile-long service road built by the U.S. Coast Guard in 1954 (NPS 2002b; NPS 2005a).

Brownstone Quarries

In the latter 19th century, the popularity of brownstone (brown sandstone) as a building material led to the development of quarrying operations on Basswood, Hermit, and Stockton islands to supply the growing regional demand. Active quarrying lasted little more than 30 years (from the late 1860s to the late 1890s), although Chequamegon Bay brownstone was renowned throughout the upper Midwest as an attractive and durable material and was used on many prominent buildings. Following the catastrophic Chicago fire of 1871, stricter fire codes further increased the demand for stone and masonry buildings. Other than the quarry excavations with drill markings evident on the rock walls, little physical evidence of the Apostle Island's four quarries and their once bustling camps and machinery is readily visible. However, only limited archeological investigations of the sites have been carried out, and archeological remains associated with workers dwellings and industrial activity areas are likely to yield significant information on the nature of the operations. Hiking trails provide visitor access to the quarry sites.

On Basswood Island, the Bass Island Brown Stone Company was the first to begin regional quarrying in 1868. The quarry (listed in the national register in 1978) had a far-reaching impact on the economic development of the Chequamegon Bay area, drawing outside investment capital that helped spur the economies of Bayfield and Ashland counties. The first stone taken from the site was used to construct a new courthouse in Milwaukee. The quarry measures about 400 feet long, 300 feet wide, and 40 feet deep. Water has filled in the deepest part of the quarry, leaving about 25 feet of the walls exposed. In 1872 former U.S. Vice President John Breckenridge (who

served as secretary of war for the Confederacy during the Civil War) announced plans to open a second quarry on Basswood Island. However, his heirs did not begin actual quarrying of the site until 20 years later. The limited operation was marginally successful, and only two small excavations remain.

The Excelsior Brownstone Company's quarry on Hermit Island was established in 1891. Company owner Frederick Prentice built an elaborate private summer home (Cedar Bark Lodge) on the island that was soon abandoned and demolished in the 1930s. The national economic depression of 1893 forced the company into receivership, although stone cutting continued until 1897.

A fourth operation, the Ashland Brown Stone Company's quarry on Stockton Island, began quarrying in 1871. It was the largest of the Apostle Island quarries, consisting today of a 75-foot-deep excavation covering several acres. Although production peaked in 1895 with 285,000 cubic feet of sandstone shipped, operations ceased in 1897 (NPS 2002b; NPS 2005a).

Farmsteads

American Indians engaged in subsistence farming on Madeline Island and elsewhere in the Chequamegon Bay region prior to the arrival of European-Americans. The Ojibwe, Huron, and Ottawa were known to have cultivated pumpkins, squash, and corn. Later, European-American settlers established farms to support the region's growing population, but their initial attempts to farm on Rocky, South Twin, and Ironwood islands proved short-lived. More substantial and successful farming enterprises eventually took hold on Michigan, Basswood, and Sand islands. Despite the comparative success of these latter operations, these farms could never compete economically with those on the mainland because of their isolated locations and the added expenses and difficulties associated with island farming and the delivery of crops to mainland markets. The last island farm was abandoned by the end of World War II, and

forest succession is reclaiming many of the former farm fields.

In 1865 Civil War veteran Richard McCloud acquired a homestead on Basswood Island. By 1870 he was providing produce from his farm to crews of the nearby brownstone quarry. McCloud's successor, Elisha Brigham, farmed the property until his death in 1923. No standing buildings remain on the site, although building foundations, a remnant orchard, fence lines, stonewalls, and associated domestic artifacts provide evidence of the former farm. Charles Rudd also farmed near the northwest corner of Basswood Island, supplementing his income with tanbark and cordwood operations. Rudd's farm ceased upon his death in 1897; building foundations and associated archeological resources remain at the site.

On Michigan Island, lighthouse keeper Roswell Pendergast (appointed keeper in 1869) planted thousands of fruit trees—apples, cherries, peaches, plums, and pears. He sold the fruit and supplied nursery stock to regional farmers. He eventually resigned his position as lighthouse keeper in 1874, and moved to the mainland to pursue his nursery enterprise. Little physical evidence of Pendergast's Michigan Island orchards remains (a gnarled apple tree stands in the woods near the lighthouse), although his legacy is reflected in the orchard industry of the Bayfield Peninsula.

Agricultural development on Sand Island proved to be the most extensive and successful undertaken in the Apostle Islands. In the 1870s, Civil War veteran Frank Shaw purchased 37 acres (later expanded to 183 acres) at the southern tip of the island. The farm was acquired by Shaw's daughter, Anna Mae, and her husband Burt Hill. The couple operated the farm until 1942. Burt Hill also managed a post office on the property. The Shaw-Hill Farm, listed in the national register in 1976, includes the following contributing structures: the original 1870 log residence/post office; main house (1919); smokehouse;

workshop, Burt Hill cabin (1910); privy; and grain storage building.

In the 1890s, another agricultural community of primarily Norwegian immigrants developed the East Bay Settlement on Sand Island. These settlers supported themselves with both farming and fishing. Although most of the settlement's buildings no longer exist, some foundations are present, such as that of the schoolhouse, which operated from about 1910 to 1930. At the Noreng family farm site, field boundaries, a remnant orchard, and the remains of former buildings, agricultural implements and associated artifacts are present. The Hansen farm retains the best overall structural integrity, with remaining buildings that include the two-story main house (1936) and earlier buildings from about 1900: a guest house, sheds (machine, wood, and twine storage), ice house, and the "Boar's Nest" (a net mending shop built in 1920) (NPS 2002b; NPS 2005a).

Tourism/Recreational Sites

In addition to the economic opportunities provided by agriculture and extractive industries, the Apostle Islands also attracted tourism-related development beginning in the mid-19th century. Tourists arrived by excursion steamboats and railroad to Bayfield where they then embarked for the islands. On Sand Island, Sam Fifield (Ashland, Wisconsin businessman and politician) established the small summer resort of Camp Stella at Shaw Point in the 1880s. The resort operated until 1914. Guest accommodations included platform tents, a dining hall, and permanent cabins. The site's remaining structures consist of five cabins, two cottages, kitchen/dining hall, ice house, and pump house. The "Sevona cabin," listed in the national register in 1976, was constructed from materials salvaged from the steamer *Sevona* that sank off Sand Island in 1905.

The West Bay Club on Sand Island was developed by the prominent St. Paul, Minnesota, architectural firm of Buechner and Orth. Architects Charles Buechner and

Henry Orth previously vacationed on Madeline Island and at Camp Stella. They designed the West Bay Club lodge for the summer vacation use of their families and colleagues. The lodge was constructed in 1911 in the rustic Adirondack-style of log construction that first gained popularity in upstate New York. The 1½-story, single-gable building has shed-roofed dormers, an interior fireplace with brick chimney, and wrap-around porch. Among the lodge's amenities were modern bathrooms and hot and cold running water piped to the bedrooms. An icehouse and shed were constructed in 1913. The property has been determined eligible for the national register.

In 1908 the Campbell/Jensch cottage, also on Sand Island, was built as the summer home of prominent Indian agent, Sam Campbell. A shed and pump remain at the site, although cabins, privy, and boathouse are no longer extant. The property is potentially eligible for inclusion in the national register.

Commercial Fishing

American Indians traditionally supplemented their subsistence activities in the Chequamegon Bay region by fishing primarily for lake trout, herring, and whitefish. Beginning with the American Fur Company's foray into commercial fishing in the 1830s, Lake Superior later attracted hundreds of competing commercial fishing operations by the latter 19th century. The fishing boom at this time was spurred by the arrival of large numbers of Scandinavian immigrants to the Great Lakes, many with fishing skills previously honed in their European homelands. Several fishing camps are known to have existed throughout the Apostle Islands. Few standing structures remain because of the temporary nature of these operations and structural deterioration resulting from weathering; however, archeological resources remain at these sites. The commercial fishing industry suffered a major setback by the mid-20th century, as overfishing and depredations by sea lampreys dramatically reduced fish stocks.

The Manitou fish camp, located in a small clearing at the southwest corner of Manitou Island, is the only unaltered commercial fishing camp in the Apostle Islands and is listed in the national register. The camp was first developed in the 1890s, and presently appears much as it did during the 1930s and 1940s. It was occupied year-round, and its hardy fishermen engaged in both open-water herring fishing and gill-netting through the ice when the lake froze over in the winter. The camp's two log cabins and three wood-frame sheds were restored by the National Park Service in 1983. Other contributing structures include a smokehouse, privy, dock, windlass, and net-drying reels. Approximately 2,000 catalogued museum objects are displayed and interpreted at the site, including nets, tools, and domestic furnishings.

Another former fishing settlement is located on the eastern shore of Rocky Island. The settlement consists of some 35 dwellings and structures that were seasonally occupied by Norwegian-American fishermen and their families from approximately the 1930s to the 1940s and 1950s. Booth Fisheries had previously established a fishing operation on the island in the 1880s. Many of the fish camp structures were later used by summer vacationers, and a small-scale resort and restaurant operated there from about 1946 to 1974. In 2008 the Rocky Island Historic District was added to the national register. The district encompasses the Hadland fishing camp, which was developed in the 1930s. The Hadland camp consists of two cabins, the ruins of a third cabin, and net drying reels. It was the last working family fishing camp within the boundaries of the national lakeshore, and was listed in the national register in 1977.

The Hokenson fishery complex is located on the southeast shore of Little Sand Bay (on the mainland at the northern tip of Bayfield Peninsula). Brothers Eskel, Leo, and Roy Hokenson, the sons of Swedish immigrants, operated the fishery for more than 30 years (1927 to 1961). The Hokensons constructed several buildings and structures that remain at

the site: a dock, fish processing and packing shed (herring shed), icehouse, twine barn (storage building and workshop), garage, 1½-story residence (used for NPS housing), cabin, privy, net reel, pile driver, and box slides. The Hokensons' fishing boat *Twilite* is also exhibited on-shore. Approximately 4,000 catalogued museum objects are displayed at the complex. The site (listed in the national register in 1976) provides easily accessible opportunities for visitors to receive interpretation of the region's historic commercial fishing industry (NPS 2002b; NPS 2005a).

Logging Sites

Logging in the Apostle Islands began shortly after steamship traffic was established on Lake Superior in 1855. The geography of the islands facilitated the skidding of logs by horse or ox teams a relatively short distance to shore. Logs were then rafted to the mainland, where several sawmills in Bayfield, Washburn, and Ashland were in operation by the 1880s. The islands' white pine and hemlock forests were nearly exhausted by the late 1890s. Hardwoods were then harvested following the departure of the specialized pine lumbering operations. Although many of the regional sawmills had closed by the late 1920s, logging reemerged in the Apostle Islands in the 1930s and 1940s and continued sporadically afterwards until logging ceased altogether in the park in 1974.

Cultural remains from the logging operations consist of deteriorating cabins and foundations, narrow-gauge railroad lines on Michigan and Outer islands, and other primarily archeological features and materials at the former camp sites. Natural revegetation threatens to obscure cultural landscape evidence of the sites. NPS historian Kate Lidfors' study of logging in the Apostle Islands (*Historic Logging Sites in the Apostle Islands: A Resource Management Plan*, 1984) provided a historical overview of logging in the islands, and identified 34 logging sites. Ten of the sites were recognized as having archeological and interpretive significance. Subsequent

archeological investigations of the Trout Point Camp on Stockton Island, which operated from about 1910 to 1930, resulted in the camp's listing in the national register. Other logging camp sites were identified after Lidfors' study, including a well-preserved site on Bear Island. Archeological evaluations of potentially significant sites are anticipated to result in additional determinations of national register eligibility (NPS 2002b; NPS 2005a).

ARCHEOLOGICAL RESOURCES

The long span of American Indian use and occupation of the Apostle Islands and upper Great Lakes region is supported in the archeological record across several cultural periods. Small bands of Paleo-Indian hunters and gatherers pursued megafauna and other large game in the area approximately 11,000 to 7,000 years ago. The fluted projectile points manufactured by these late Ice Age hunters are perhaps the most distinguishing lithic artifacts of the period. The earliest known site in the region dates to about 11,000 BP and was discovered near Chequamegon Bay on a remnant beach associated with ancient Lake Duluth (a glacial period precursor to Lake Superior). The site consisted of stone tools and chert materials. No confirmed Paleo-Indian sites have been discovered within the national lakeshore, although glacial beach remnants are common and sites from the period could exist in association with these features. An inconclusive site consisting of non-diagnostic quartz debris was found on Oak Island (NPS 2004f; NPS 2005a).

The following Archaic period (8,000–2,000 BP) was characterized by cultural adaptations to the climatic changes occurring at the close of the last Ice Age. Although the period was marked by massive floral and faunal extinctions, a diverse range of resources remained available to support Archaic period peoples. The size of groups increased, tool kits became more complex, and evidence of ceremonial burials also characterize the period. The Ebob Site on Stockton Island consists of a single stemmed projectile point

dating from the late Archaic period (NPS 2004f). Additional evidence for Archaic period occupation has recently been found at Quarry Bay, on the Presque Isle tombolo, and in the interior of Oak Island (NPS 2004f; NPS 2006; NPS 2008b; Salzer 1980a).

In the eastern United States, the subsequent Woodland period (approximately 2,000–500 BP) is typically subdivided into early, middle and late periods. However, because of the cultural continuity of the period in the western Lake Superior region, some archeologists consider it more useful to divide the Woodland period in this region into Initial (2,000–1,300 BP) and Terminal (1,300–ca. 500 BP) periods. Although no sites from the Initial Woodland period have been identified in the national lakeshore, two distinct groups (the Blackduck and Sandy Lake cultures) from the Terminal Woodland period are documented in the archeological record. The semi-sedentary Blackduck people harvested wild rice and may be ancestors of the historic Ojibwe or Cree. The less well known Sandy Lake people are recognized in the archeological record by their manufacture of a diagnostic ceramic ware. Archeological remains from both cultures have been identified at the national register-listed Morty Site on Stockton Island. Most of the known or confirmed aboriginal sites in the park are from the Terminal (or Late) Woodland period, with ceramic assemblages similar to the Lakes phase of the northern Great Lakes region (NPS 1999a; NPS 2004f; NPS 2005a; Salzer 1980b).

The early historic period begins in the mid 17th century, marked by the arrival of French explorers, missionaries, and fur traders to the Chequamegon Bay region. A French trading post was established on Grant's Point on Madeline Island, and the fur trade dominated the regional economy until about 1820. Extensive farming was undertaken at this time along Chequamegon Bay by several tribes: the Huron, Ottawa, Potawatomi, Sauk, Fox, and Illinois. The Santee Dakota (commonly known as the Sioux) replaced many of these tribes by the end of the 17th century. Within

the national lakeshore, archeological sites from this period consist of small hunting and fishing camps, including the P-Flat Site on Manitou Island, which is listed in the national register. Large historic period village sites also are found on Madeline Island (NPS 2004f; NPS 2005a; NPS 1989; Birmingham and Salzer 1980).

Archeological surveys of the park began in the mid-1970s under the contracted services of Beloit College's Logan Museum of Anthropology. These initial surveys focused primarily on the identification of prehistoric sites; surveys were conducted of beaches, ancient lake level ridges, and other locations having a reasonable probability for prehistoric camps and activity areas. Subsequent research at the P-Flat Site on Manitou Island and the Morty Site on Stockton Island led to the listing of these sites in the national register. Archeological investigations conducted in the 1980s (often in fulfillment of Section 106 compliance requirements) led to the recording of several historic archeological sites on the islands, including former farmsteads, logging camps, and other historic sites associated with European–American settlement and activities. The Trout Point Site on Stockton Island (an early 20th century logging camp) was recorded and subsequently listed in the national register (NPS 1999a; NPS 1986). Archeological testing was also conducted in 1998 at the light stations on Sand, Michigan, Outer, and Devils islands (NPS 1993). Historic archeological resources provide physical evidence to supplement information found in the written historical record. This information can reveal the nature of subsistence and commercial activities, the lifestyles and living arrangements of former island inhabitants, and other research questions.

Several historic shipwrecks have also been recorded within or just outside the boundaries of the national lakeshore. The wreck of the *Noquebay*, which sank off the east coast of Stockton Island in 1905, was documented and evaluated by the NPS Submerged Cultural Resources Unit in 1983. In partnership with

the Wisconsin underwater archeology program, other shipwrecks have been positively identified including the *Lucerne* off Long Island; the *R.G. Stewart* off the eastern shore of Michigan Island; the *Fedora* and the *H.D. Coffinberry*, *Ottawa*, both located between Basswood Island and the mainland; the *Sevona* off the Sand Island shoals; and the *Pretoria* off the northeastern shore of Outer Island. The above vessels were engaged predominantly in the transport of iron ore, timber, and other commodities for commercial markets during the latter 19th century. The archeological evidence associated with the wreck sites provides valuable insight into the nature of historic shipping activities on Lake Superior. The *Noquebay*, *R.G. Stewart*, and the *Lucerne* have been listed in the national register (NPS 1999a; NPS 2004f).

All of the national lakeshore's 66 known prehistoric and historic archeological sites are recorded in the Archeological Sites Management Information System (ASMIS) database maintained by the NPS Midwest Archeological Center. Approximately 25% of the park has been surveyed, with most survey work focused on locations considered likely to yield archeological resources, or conducted in response to compliance requirements for development or other undertakings. Limited archeological excavations or data recovery has been carried out in the park, and only the Morty and P-Flat Sites have been excavated for research purposes beyond initial evaluative testing (NPS 1999a; NPS 2004f).

ETHNOGRAPHIC RESOURCES

As defined in DO/NPS-28, an ethnographic resource is "a site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it." The National Park Service is striving to learn more about the ethnographic importance of the Apostle Islands to associated American Indian groups. Ethno-historians have generally

placed the presence of the Lake Superior Ojibwe in the area from the latter 17th century based on the accounts of French explorers. Ojibwe histories often push tribal presence in the area further back in time by several centuries.

The eastern two-thirds of the Apostle Islands National Lakeshore's mainland unit falls within the reservation boundaries of the Red Cliff Band of Lake Superior Chippewa. The Bad River Band of Lake Superior Tribe of Chippewa Indians maintain cultural ties to Long Island (Chequamegon Point), which is linked to the mainland as a sand spit during periods of low lake water levels. Historical accounts from the late 17th century indicate that along with the Ojibwe, the Huron, Ottawa, Potawatomi, Sauk, and Fox also were known to inhabit the Chequamegon Bay region (NPS 1999a; NPS 2005a).

In 1998 a research team from the University of Arizona interviewed Ojibwe elders during preliminary ethnographic investigations. The elders reported that historically, Ojibwe bands from the entire Lake Superior region frequented all of the Apostle Islands on a primarily seasonal basis. Islands closer to the mainland were generally inhabited for longer periods of time than those further offshore. However, the seminomadic Ojibwe traveled widely between the islands and the mainland in response to seasonal changes and the availability and distribution of resources. The islands were used for various purposes, such as hunting and fishing, and as an abundant source of berries, maple sap for processing sugar, and medicinal plants. Controlled burning reportedly was used as a means of maintaining the flourishing berry patches (NPS 2005a).

The Ojibwe historically lived together in villages during the summer, and dispersed into smaller family groups during the winter when hunting became a primary activity. Several families related by kinship formed bands of about 20 to 50 people, and on occasion joined other bands for ceremonies, trade, and other

important events. Individuals also maintained clan affiliations with others outside their immediate families. Religious and spiritual life permeated daily existence, and prayers and offerings were made to tribal spirits for protection and guidance. Traditional medicine people were important figures in Ojibwe society, respected for their powers to contact the spirit world and conduct healing and other rituals. Although religion was largely personal, the *Midewiwin* or Medicine Lodge served an important communal religious function, guiding spiritual health and individual behavior.

Beginning in the early 17th century, French explorers, traders, and missionaries made the first European contact with the Ojibwe and other regional tribes. The fur trade profoundly altered traditional ways of life, as increasing tribal dependence on the trade goods supplied by the French in exchange for furs disrupted customary hunting and gathering activities. Intertribal warfare and territorial relocations were other consequences of the fur trade. Initially forced west by the Iroquois Confederacy, the Ojibwe in turn were generally successful in pushing the Santee Dakota farther west into present-day Minnesota and North and South Dakota. The Ojibwe laid claim to the region around the western point of Lake Superior and the headwaters of the Mississippi River. Madeline Island in Chequamegon Bay was the site of a major Ojibwe settlement, and other villages were established during the 18th century further inland at Lac Courte Oreilles and Lac du Flambeau.

Treaties signed in 1837 and 1842 between the United States and the Wisconsin Ojibwe resulted in the cession of tribal lands in Wisconsin, eastern Minnesota, and the upper peninsula of Michigan in exchange for annuities, provisions, and other federal support. The treaties contained stipulations that reserve to the Ojibwe customary rights to hunt, fish, and gather on the ceded lands. Ojibwe efforts to resist removal from their homelands led a tribal delegation to meet with President Millard Fillmore in Washington,

D.C., in 1852. The meeting provided the impetus for the 1854 Treaty of La Pointe by which the Ojibwe ceded the last of their lands in Minnesota to the United States in exchange for reservation lands. The 1854 treaty created the Bad River, Red Cliff, Lac du Flambeau, and Lac Courte Oreilles reservations in Wisconsin.

Long-standing legal disputes between the state of Wisconsin and the U.S. federal government regarding the Ojibwe's retained treaty rights resulted in the "Voigt Decision" of 1983. Under the decision, the federal district court affirmed the treaty rights retained by the Ojibwe to hunt and fish on off-reservation lands ceded to the United States. The Great Lakes Indian Fish and Wildlife Commission, in cooperation with the state of Wisconsin, currently regulates the safe harvest of treaty resources to ensure conservation objectives. Interim agreements on regulations for hunting, fishing, trapping, and gathering seasons have been negotiated between the Ojibwe and the National Park Service for ceded territory within Apostle Islands National Lakeshore. A long-term agreement is being developed.

Adaptation to reservation life has often been a struggle for the Ojibwe over the last 150 years. More recently, however, economic growth in areas near the reservations has provided employment opportunities for tribal members. Many live and work in urban areas but travel back and forth to the reservations to connect with family and reintegrate with tribal culture. Economic opportunities on the reservations are also increasing, and several successful tribal enterprises have emerged, such as the fish hatcheries that each of the six Ojibwe bands operates in the state. Despite the challenges, the Ojibwe have successfully retained several aspects of their traditional heritage including use of the Ojibwe language, religious practices, oral traditions, crafts, knowledge of herbal medicines, and important gathering activities such as harvesting wild rice.

Although no comprehensive ethnographic resource investigations have been conducted at the national lakeshore, a study conducted in 1999 identified over 200 plants having traditional importance to the Ojibwe (Stoffle et al. 2001). In accordance with NPS *Management Policies 2006*, the Park Service permits consumptive use of national lakeshore resources by tribal members, including treaty-protected rights for hunting, fishing and the gathering of certain plants and berries, to the extent that these activities are compatible with park purposes, do not adversely affect park wildlife or the reproductive potential of plant species, or otherwise adversely affect park resources.

Also in accordance with NPS *Management Policies 2006*, the American Indian Religious Freedom Act (1996), and other laws and policies, the Park Service permits tribal access to park areas for traditional religious,

ceremonial, and other customary activities at places historically used for such purposes. In consultation with the tribes and consistent with tribal goals, the Park Service will protect sacred sites and other ethnographic resources should these be identified. The National Park Service will not disclose the location and character of sites or resources to the general public if disclosure would result in significant invasion of privacy, risk harm to historic resources, or impede traditional religious use and access by tribal members.

In collaboration with the Ojibwe and other affiliated tribes, the National Park Service will identify or evaluate potential ethnographic resources by conducting appropriate research and investigations (i.e., ethnographic overviews and assessments, traditional use studies, ethnographic landscape studies, oral histories) that inform decision making.

VISITOR USE AND EXPERIENCE

VISITOR USE AND CHARACTERISTICS

For the purposes of this document, visitors are defined as anyone who enters the park or uses NPS facilities for any reason. Visitor use data is the information regarding how many people visit the park, when they visit, how often they visit, where they travel from, how long they stay in the park, etc.

Visitation in Apostle Islands National Lakeshore has generally increased from the 1980s, with slight declines in visitation from 1984-86, 1991-92, 1999-2004, and 2006-08 (see figure 7). Recently, visitation has been on the rise again, with 170,000 recreation visits in 2009. Total recreation visits had a peak level of visitation in 1998. The rather substantial decline in visitation after 1999 and until 2004 corresponds to an overall decline in visitation to national parks around the country. There is not a clear consensus as to the cause for the decline, but many suggest that political and economic events played a role in the reduced number of tourists at many attractions.

Long-term trends suggest that the park's visitation will hold steady or slightly increase during the next 25 years. This would be due to potential increases, at least in the near term, in international visitation due to favorable exchange rates, and the more important consideration of the surrounding region's population growth.

Approximately 72% of annual visitation to Apostle Islands occurs in June-August (see figure 8) when visitors experience more favorable weather and lake conditions. Visitation in the winter months is mostly related to viewing the sea caves, which is highly dependent on when and how much Lake Superior freezes over.

A recent visitor study at the Apostle Islands (Littlejohn and Hollenhorst 2004) identified the current visitor profile in terms of demographics, trip characteristics, and preferences. The study was conducted by the University of Idaho, Park Studies Unit, in the summer of 2004. Visitor contacts were made at 10 different locations in the national lakeshore, including several islands, with 718 visitor groups contacted and 671 of these groups (93%) responding.

Based on the study, average group size of visitors was four, with 40% of groups having two people, 28% having three or four people, and 22% having six or more people. Average age of visitors was 47, with 59% aged 36 to 60 and 11% aged 15 years or younger. This is an increase in the average age of visitors in comparison to a previous visitor study (Kuentzel and Heberlein 2003) that examined visitor use in the Apostle Islands in 1975, 1985, and again in 1997. The average age of visitors in 1975 was 37; in 1985 it was 36; and in 1997 it was 44. A majority of visitors (65%) in the 2004 visitor study had a college or graduate degree. Roughly one-third of visitors contacted during the study were visiting the Apostle Islands for the first time, while 68% had visited more than once. The majority of respondents were from Wisconsin (42%) or Minnesota (33%), with 2% of visitors coming from outside the United States. The average length of stay for visitors was 5.5 hours for those who did not stay overnight. For those who spent more than 24 hours, the average length of stay was 4.6 days (Littlejohn and Hollenhorst 2004).

Figure 7: Annual Visitation, 1980-2009

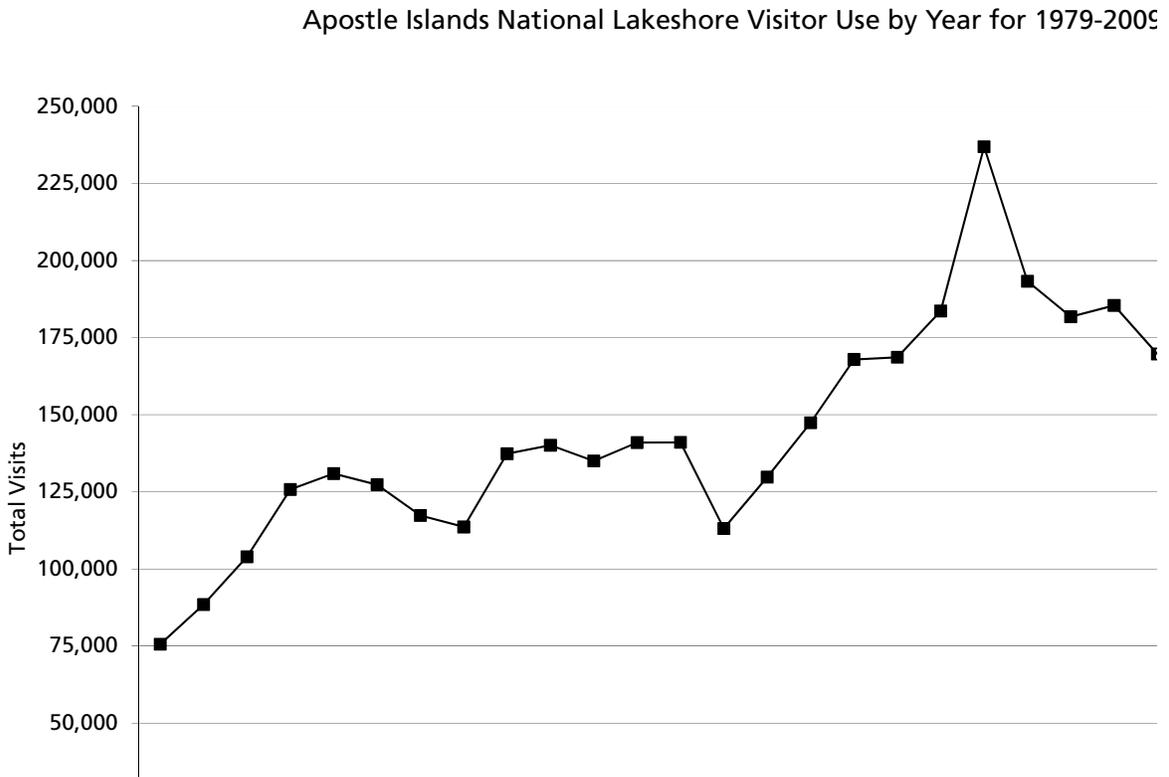
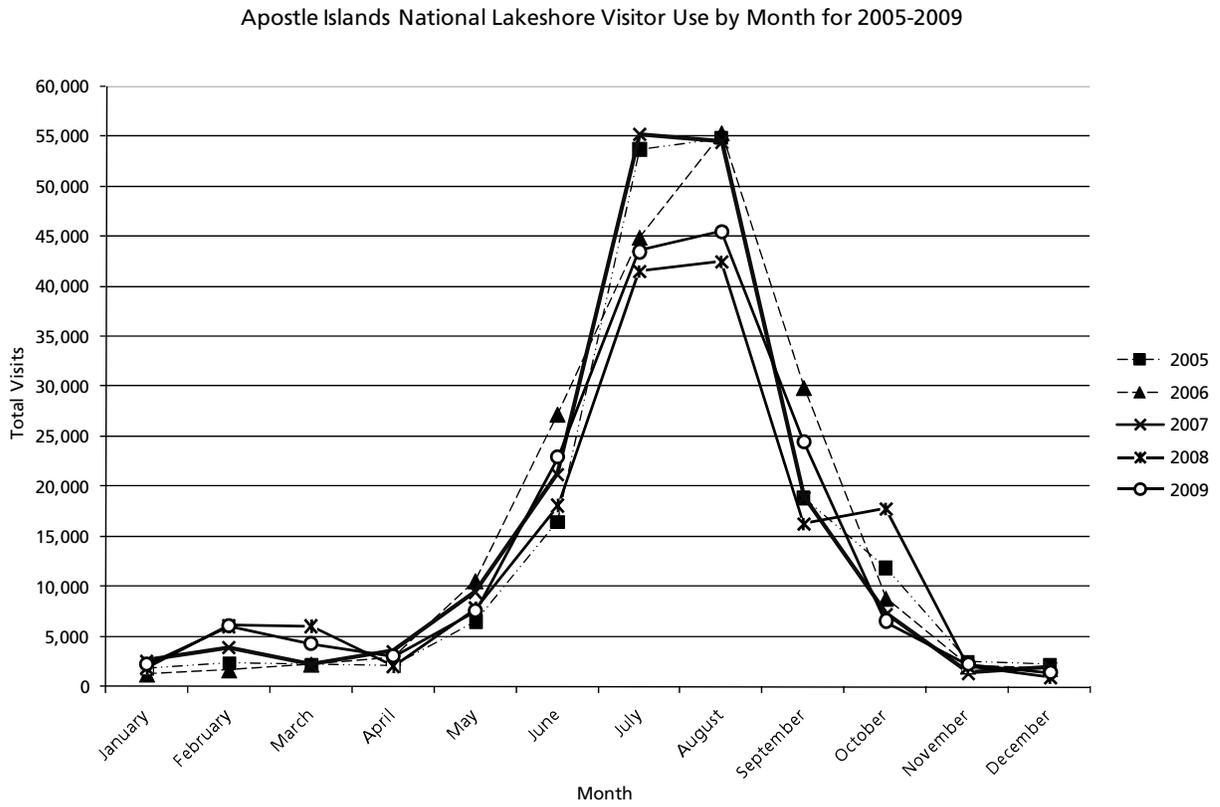


Figure 8: Monthly Visitation, 2005–2009



VISITOR PERCEPTIONS, OPINIONS, AND CONCERNS

Based on the 2004 visitor survey, the 2001 survey of campers, annual polling of visitor satisfaction, and the GMP scoping effort, the overall quality of the visitor experiences in the park is considered to be very high. In both the 2004 visitor survey and the GMP scoping effort, people said they wanted to see little, if any, change to the current visitor recreation and interpretive opportunities. Some people mentioned wanting more trail and camping facilities, particularly group camping facilities, improved boat docks (more spaces, more accessible), and other island access opportunities.

Items frequently identified in the 2004 survey, and supported by the GMP scoping effort, that greatly contribute to a positive visitor experience include encounters with rangers, lighthouse tours, visiting historic sites, park information, great scenery, natural quiet, access to the lake, campsite and trail opportunities, walking the beaches, wildlife watching, and the cruise boat tours (Littlejohn and Hollenhorst 2004). In the 2004 visitor survey, visitors were asked which facilities were considered important and to rate the quality of each of the visitor services and facilities they used. The services and facilities that received the highest “importance” rating were campsites, trails, vault toilets/outhouses, and the cruise boat tour. The services and facilities that received the highest quality ratings, “good” and “very good,” included the Northern Great Lakes Visitor Center, ranger programs and tours, and the park brochure and map. The services and facilities that received the lowest quality ratings were the cruise boat tour and the vault toilets/outhouses (Littlejohn and Hollenhorst 2004).

Some of the most commonly mentioned concerns of visitors related to crowding at parking lots and docks, noise associated with motorboats and larger visitor groups, and litter. Some visitors suggested alternative

management strategies to mitigate existing problems such as increased education on Leave No Trace practices, improvements to parking areas, more efficient docking practices, more dock space, and increased enforcement of rules and regulations (Littlejohn and Hollenhorst 2004).

Information collected in the 1975, 1985, and 1997 studies (Kuentzel and Heberlein 2003) specifically evaluated perceptions of crowding among Apostle Island boaters in relation to increasing use levels, particularly kayak use. The study concluded that increasing use was not commensurate with increasing perceptions of crowding—in fact, even with twice as many boaters in 1997 than the previous years, the 1997 boaters felt no more crowded than the 1975 boaters. However, another study (Heberlein et al. 1999) did find that, overall, boaters feel slightly more crowded than kayakers. This may be due to the tendency of boaters to congregate near islands with the best anchorages. Even then, however, only 17.6% of boaters felt the places they stopped at were crowded, compared to 12.8% of kayakers. The studies demonstrate that there are numerous opportunities for solitude in the islands. The only places where relatively large numbers of people (10-30+) may occur at times are near dock areas, some beaches, lighthouses, and group camping areas.

ABILITY TO ACCESS THE PARK, INCLUDING UNIVERSAL ACCESS

The mainland unit of the park can be reached by road, but most visitors consider the islands and Lake Superior to be the most rewarding destination. Little Sand Bay is the most frequently used area in the mainland unit, serving up to 60,000 visitors a year. It has a beach, boat launch, kayak launch, picnic area, and a visitor center. The other primary use areas in the mainland unit are Meyers Beach, serving up to 40,000 visitors a year, and the

visitor center at the historic Old Bayfield County Courthouse.

According to the 2004 visitor survey, lack of time (57%) was the most common reason for not visiting the park islands, while 20% said they did not own a boat. Visitors reach the islands by a variety of watercraft, including concession-operated cruise boats, private powerboats, sailboats, canoes, and kayaks. According to the 2004 survey, the most used form of transportation to visit the park was a private vehicle (68%), followed by foot (27%), kayak (25%), powerboat (21%), sailboat (15%), and commercial cruise boat (14%) (Littlejohn and Hollenhorst 2004). Kayak use at Apostle Islands National Lakeshore has increased rapidly since the late 1980s and is now the main mode of transportation used by visitors to reach campsites on the islands.

Most visitors go to more than one island in a day. Public docks can be found on 13 of the islands in the park. Most motorboaters and sailboaters congregate at relatively secure anchorages or docks at Stockton, Rocky, South Twin, Raspberry, Oak, and Sand islands. These islands also receive the highest levels of use due to the secure docks but also because of their scenic attractions and visitor facilities—several are relatively close to the mainland, and most are on the concessioner’s tour boat circuit. Islands that are closer to the mainland tend to receive higher levels of use, while the more remote islands, such as Outer and Cat, receive lower levels of use. Eagle and Gull islands and the northwest corner of Otter Island are closed to visitors in the summer (May 15 to September 15) due to the presence of nesting birds.

Cruise boats provide opportunities for visitors to sightsee the islands and light stations from a distance, view the sea caves, watch wildlife, spend time on Lake Superior, and enjoy the sunset. Current cruise boats can accommodate up to 149 passengers. The cruise service also provides daily island shuttles, for a fee, to Stockton, Oak, and Raspberry islands from late June to September. Day use visitors can use these

shuttles to spend up to three hours on Stockton or Raspberry islands. Shuttle passengers can hike, camp, picnic, and take interpretive tours during their stay on the islands. Between 1,000 and 4,000 cruise passengers tour the Raspberry Island lighthouse annually.

Currently, the park has several facilities that are accessible to visitors with disabilities including the visitor centers at headquarters, Little Sand Bay, and Stockton Island. There also is a campsite at Stockton Island that is accessible, but visitors would need to be able to navigate getting onto the island via a dock or other boat landing that is not designed for universal access. There are no universally accessible docks in the park, but there is an accessible kayak launch at Little Sand Bay. Currently, there are no recreation trails that are designed for universal access. Although there are not many facilities on the islands designed specifically to promote universal access, there have been several organized groups of visitors with disabilities who have visited the park.

LAKE AND ISLAND RECREATIONAL OPPORTUNITIES AND EXPERIENCES

Visitors have a wide range of lake and island based recreation opportunities and experiences to choose from, whether it is a small group tour of one of the light stations, a family cruise on the lake, a solitary walk to discover an old automobile half-buried in the sand, or kayaking on a multiple stop overnight trip through the wilderness area of the islands. It is this diversity of unique and place-based recreation opportunities in a beautiful and interesting setting that visitors appreciate about the national lakeshore. As noted by William Cronon (2003), the Apostle Islands allow visitors to experience a “superb example of a wilderness in which natural and human histories are intimately intermingled.”

A variety of lake based recreation opportunities are available in and near the national lakeshore. The area has long been a

major attraction for boaters, sailors, and more recently, kayakers. The islands' protected bays, public docks, pristine beaches, historic sites, and natural beauty offer outstanding boating, fishing, and sightseeing opportunities. In particular, the many miles of undeveloped shorelines and wild, forested interiors make for stunning scenery that is greatly valued by visitors during their recreation experiences. Further, the open waters of Lake Superior can provide visitors with a high degree of challenge and adventure due to constantly changing marine conditions that require preplanning and constant caution.

In addition, the islands offer plentiful day and overnight recreation opportunities in close contact with nature and extensive history. Island based recreation opportunities include hiking, swimming, camping, fishing, sightseeing, hunting, visiting historic sites, and participating in interpretive programs and guided trips. Some of the most popular activities on the islands tend to be sightseeing, lighthouse touring, day hiking, and camping, although many visitors participate in more than one activity.

Most people who spend time on the islands stay on the shorelines, particularly beaches, or in the general vicinity of the developed areas, particularly those areas with campsites or lighthouses. In general, cruise boat, sailboat, and motorboat visitors (who together make up the largest number of users) tend to come on shore to use the park facilities, picnic, or explore. With the exception of campers, these visitors spend relatively short periods on an island and rarely take long hikes. The motorboat and sailboat visitors usually sleep on their boats, with only a small number camping on shore. Kayakers are the most frequent users of campsites and tend to venture further into the interior of the islands than other visitors.

The islands are logistically challenging to reach, so visitors who make the effort to directly experience Lake Superior and the

islands are treated with outstanding opportunities for remoteness, immersion in nature, and personal challenge, while gaining a better understanding of "island living" from both a modern and historical perspective. Currently, the islands are relatively wild, with limited development and no permanent human presence. Further, except for camping (which requires a permit), access on the islands is largely unconfined and unregulated. Opportunities to have an island experience are a fundamental value of the national lakeshore. This sentiment is echoed by a student visitor: "You have never lived until you have slept on an island."

The 2004 visitor survey and recent GMP scoping effort confirmed that visitors highly value being able to experience solitude, quiet, wildness, connection with nature, and first hand discovery of the islands' history. Most visitors to the islands stay near the shorelines, but for those visitors who take the opportunity to venture into the interior of the islands, an extremely high degree of solitude and primitive recreation opportunities may be found. On many islands, it is possible to walk for miles without encountering another visitor. Most of the sounds of civilization give way to the sounds of the forest after traveling only a short distance inland. Further, many cultural resources are scattered throughout the islands and contribute to outstanding opportunities for self-discovery and understanding of the islands' history.

Well-developed trail systems are present on Basswood, Oak, Outer, Sand, and Stockton islands. Minor trail systems exist on Devils, Manitou, Michigan, Otter, Raspberry, and Rocky islands. There are more than 50 miles of maintained trail opportunities on the islands that provide access to forested areas, scenic beaches, abandoned quarries, old farm sites, historic logging camps, lighthouses, beaches, and campsites.

Besides trails, there are numerous sandy beaches that are great for walking and exploring the islands and the beautiful scenery

of Lake Superior. Some favorite beaches on the islands are Julian Bay on Stockton Island, Long Island beaches, Raspberry Island sandspit, East Bay on Sand Island, South Twin sandspit, and Rocky Island sandspit.

Many opportunities exist for picnicking on the islands. Many individual and group campsites have picnic tables. Lighthouse lawns tend to have picnic tables. There are also picnic areas that are separate from campsites and lighthouses on Oak, Rocky, South Twin, and Stockton islands.

Overnight opportunities are also plentiful on the Apostle Islands and are an important part of visitors being able to immerse themselves in the natural rhythms of the islands and gain a sense of island living. There are 65 designated campsites in the park, and zones have been established on 16 islands where camping is allowed outside designated sites.

In general, from the 1980s to 2009, overnight stays in the park have increased. In 1997 a computerized backcountry permit system was developed and implemented. More than 1,500 camping permits have been issued annually since 1998.

Stockton Island receives the highest amount of camping use (>4,500 campers/year). It has 21 individual sites and 3 group sites. A small amphitheater and a visitor center with an information desk, exhibits, and sales items are located near Stockton Island campground. Nightly campfire programs serve 1,000-1,400 visitors from late June to Labor Day.

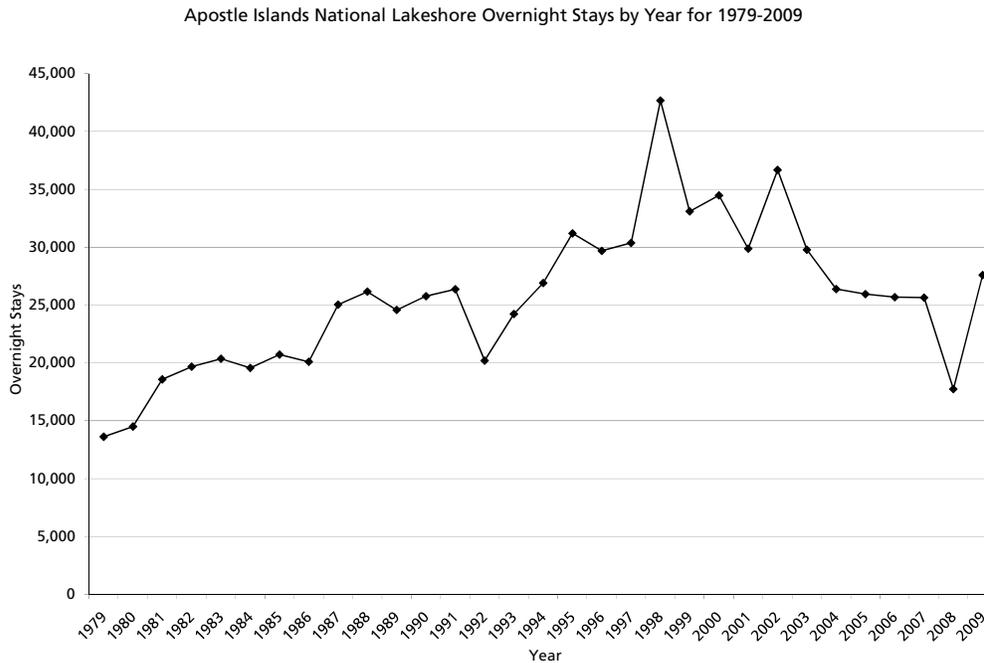
With the exception of Stockton, the islands that are closest to the mainland receive the highest overnight visitation. These islands include Basswood (>1,400 campers/year), Oak (>2,950 campers/year), and Sand (>2,600 campers/year). Islands farthest from the mainland such as Devils, Michigan, and Outer

have fewer campsites and receive fewer visitors. All designated sites and the majority of sites used by backcountry campers are located near the shoreline. Designated campsites generally (but not always) contain a tent pad, fire ring, bear-proof food locker, and picnic table, with a toilet nearby. Group sites generally have tables, fire rings, and bear-proof food lockers, with toilets nearby. Very little camping is done in the island interiors.

A visitor study in 2001, conducted by Dr. Ingrid Schneider and Rainry Salk, examined the trip patterns of over 200 Apostle Island campers, among other study objectives. According to the study results, respondents most frequently used kayaks (54.1%); another 25.1% used motorboats as their primary mode of travel. Average group size of campers was 3.74 people, with an average stay of 3 nights (Schneider and Salk 2002). The majority of campers entered the islands at Bayfield (58.1%); 24.1% entered at Little Sand Bay, and 14.8 % entered at Red Cliff. Survey respondents stopped at an average of 3.4 islands and camped on 1.7 different islands during their stay (Schneider and Salk 2002). The average number of total contacts with NPS personnel during their visit was 1.6. For more detailed information about typical camping trip routes, please see the final visitor study report (Schneider and Salk 2002).

In addition to campsites, boaters have overnight opportunities at public docks on 13 islands and at Little Sand Bay on the mainland unit. Dock space is available on a first come – first served basis. A fee is charged for using docks between 6:00 pm and 6:00 am. Dock space is often in high demand at some locations, and there have been some complaints about crowding and associated noise with overnight activities. Further, some have noted concerns about the lack of accessibility of some docks for different types of watercraft.

Figure 9: Overnight Stays, 1979-2009



MAINLAND RECREATIONAL OPPORTUNITIES AND EXPERIENCES

Visitors who remain on the mainland during their visit to the national lakeshore, or spend time there before or after their visit to the islands, will find a number of rewarding opportunities. Visitors can stop at the multi-agency Northern Great Lakes Visitor Center located near Ashland to get an overview of and information on the region. It is recommended that all visitors begin their visit with a trip to the headquarters visitor center in Bayfield. At the visitor center, park staff are available to provide orientation, information, and interpretation. A film and other exhibits highlight the resources and opportunities throughout the national lakeshore.

If visitors travel 13 miles north of Bayfield, they access Little Sand Bay where they can walk along a popular sandy beach and gain

extensive views of several of the islands. In addition, another smaller visitor center is available for area orientation. The National Park Service provides a dock, kayak launch, picnic area, overnight parking lot, and restrooms. The Town of Russell operates a public boat launch and campground adjacent to the NPS facilities. Further, the Hokenson Brothers Fishery, a commercial fishing historic site, may be open for exploring. Meyers Beach, 18 miles from Bayfield on Highway 13, also has visitor opportunities including an extensive beach and the Lakeshore Trail. The Lakeshore Trail is a rugged path that currently extends 4.5 miles from Meyers Road past the cliffs, with viewing opportunities of the mainland sea caves. Meyers Beach is a very popular beach area for launching kayaks, swimming, sunning, walking, and viewing the lake.

Visitors may also camp on the Mainland unit with one campsite located along the Lakeshore Trail, 4.5 miles northeast of the trailhead at Meyers Road. Overnight dock opportunities are also available at Little Sand Bay.

OPPORTUNITIES TO UNDERSTAND THE SIGNIFICANT STORIES OF THE APOSTLE ISLANDS

Enjoying the park and its resources is a fundamental part of the visitor experience. That experience is heightened when it progresses from enjoyment to an understanding of the reasons for the national lakeshore's existence and the significance of its resources. Participating in personal interpretive services (e.g., staffed visitor centers, ranger-led activities, narration provided to visitors on the tour boat), and making use of nonpersonal interpretive services (e.g., wayside exhibits, visitor center exhibits, publications, computer technologies) helps visitors form their own intellectual and emotional connections with the meanings and significance of the national lakeshore's resources.

The islands provide a number of interpretive facilities and programs for visitors. A visitor center is on Stockton Island and is staffed intermittently; it has exhibits on natural and cultural history. Evening talks or campfire programs, offered on the island from late June through Labor Day, cover topics such as bears, wilderness, and shipwrecks. A Stockton Island guided nature walk is also sometimes available. National lakeshore staff offer guided tours to visitors arriving in private boats from mid-June to September. These tours occur at several lighthouses and occasionally at the Manitou Island fish camp. From 2,000 to 4,000 visitors arriving at Raspberry Island via sailboat, power boat, or sea kayak tour the lighthouse each summer. Sand Island lighthouse is toured by 1,500 to 2,500 visitors annually with the guidance of volunteer lighthouse keepers. The light stations at Devils and Michigan islands receive 1,000 to 1,500

visitors each, also with assistance from volunteer lighthouse keepers. From 1,200 to 1,500 visitors tour the historic commercial fishing camp at Manitou Island.

On the mainland, visitors have opportunities to gain a better understanding of the national lakeshore's natural and cultural resources as well as visitor opportunities at several locations. The park's main visitor center is located at the old Bayfield County Courthouse, colocated with headquarters, in the middle of the City of Bayfield. This facility is staffed and contains exhibits, an information desk, and a retail outlet. Visitors also may get information at the Little Sand Bay Visitor Center and can request a guided tour of the Hokenson Brothers Fishery, a commercial fishing museum.

In addition, the National Park Service is a cooperating agency in the Northern Great Lakes Visitor Center, located near Ashland, Wisconsin. This visitor center has information on visitor opportunities in the regional area including the national lakeshore, interactive exhibits, a five-story observation tower, and interpretive trails.

All of the visitor centers support orientation and education of visitors to the national lakeshore. However, there have been some concerns about the size, condition, and location of some of these facilities. The visitor center associated with headquarters in the City of Bayfield is located in a historic building that is very important to the gateway community and has an excellent auditorium. However, this facility has limited, inflexible space for exhibits and limited opportunities for direct interaction between visitors and NPS staff and volunteers. Further, although the historic building is located in the center of the City of Bayfield, it is outside the immediate transportation routes through town, so it has limited visibility to out-of-town visitors. In addition, the current location is a distance from the concession cruise boat, so few cruise visitors access the visitor center. Finally, there are no views of the islands or Lake Superior from the facility.

The Little Sand Bay Visitor Center is in poor condition and has limited exhibit space. The Stockton Island Visitor Center is commonly unstaffed and also has limited exhibit space. However, this facility meets the current needs of the smaller number of visitors that it serves.

The Northern Great Lakes Visitor Center is a new and modern facility with innovative exhibit design and a coordinated focus on regional public lands. However, this facility is not located in a place that captures a high number of Apostle Island visitors. Collectively, the issues related to the national lakeshore's visitor centers create some challenges for visitor understanding of the significant stories of the Apostle Islands.

Additional education and orientation is provided to visitors via nonpersonal services such as trailhead and boat dock bulletin boards, waysides, trail signs, and park brochures.

VISITOR SAFETY

Apostle Islands National Lakeshore is a challenging place to access and explore, which is exciting but also potentially hazardous. National lakeshore staff are always especially diligent in providing effective visitor safety information in easily accessible locations and formats. The park encompasses more than 450 square miles of Lake Superior that is renowned for its cold temperatures, rough seas, fog, and sudden squalls. The lake has been described by Julian Nelson, a

commercial fisherman, in the following terms: "The lake is the boss. No matter how big you are or what kind of a boat you've got, the lake is still the boss. Mother Nature dictates a lot of things." The National Park Service must ensure that visitors are aware of the risks and hazards associated with the lake and island environments.

Many visitors are not highly skilled boaters and therefore run the risk of being caught off-guard with changing weather and lake conditions. Response times to areas on Lake Superior can be far greater than for similar distances on the mainland. This concern is compounded by the compromised ability of the park staff to maintain adequate emergency response capabilities due to the use of inadequate and outdated facilities.

Other visitor safety concerns include the resident bear populations on the islands of Stockton, Oak, and Sand. Although these islands host resident bears, bears can swim to any of the Apostle Islands, so bear safety is an issue for all visitors. Information on the availability of well water and lake water treatment options is also important for visitors' safety, especially those planning overnight trips. Well water is only available at Little Sand Bay, on Sand Island, and at Presque Isle on Stockton Island. Finally, topics such as campfire safety, grilling in dock areas, and insect and tick control are other safety related issues that visitors need to be educated about before and during their trip to the national lakeshore.

PARK OPERATIONS

The park's operations are discussed below under four divisions: interpretation and education, protection, planning and resource management, and facility management.

INTERPRETATION AND EDUCATION

The park's interpretation and education staff consists of a core group of permanent employees supplemented by temporary employees hired during summer months. This staff is also augmented with numerous volunteers in summer.

The park's keystone education program, developed and conducted in partnership with Northland College, is called Island School. It typically takes place on Stockton Island in May. Interpretive efforts have traditionally centered on developed visitor use areas. In the summer of 2008, interpretive park rangers were stationed at the Bayfield Visitor Center, Meyers Beach, Stockton Island's Presque Isle, and the Raspberry Island lighthouse. Logistics are a constant challenge for the park staff even when the weather cooperates. Typically, interpretation rangers and volunteers staff the visitor center at Stockton-Presque Isle from mid-June to Labor Day. From mid-June through the end of September, interpretation rangers and volunteer lightkeepers conduct lighthouse tours at several lighthouses on the islands. As with most other island-based workers, these employees and volunteers usually live in housing units on the islands and are transported off the islands for their days off.

An information desk, interpretive displays, and book sales area are also located at the Bayfield, Little Sand Bay, and Stockton-Presque Isle visitor centers. Interpretation operations include assistance in trip planning

and the issuance of backcountry camping permits. The interpretation staff is also primarily responsible for collecting, counting, and depositing revenues generated by the park's fee program.

Informational signs, maps, and bulletin boards, as well as wayside exhibits, are located at many docks and developed areas throughout the park. There are a few wayside exhibits located in more remote areas on several islands.

PROTECTION

Visitor and resource protection rangers conduct patrols of about 154 miles of shoreline, numerous historic and archeological sites, trails, campsites, and public use areas and facilities on 21 islands and the mainland. These protection rangers are based out of Little Sand Bay and Roys Point on the mainland year-round. In 2008 all were permanent park employees, although, at times, the permanent staff has been supplemented with a small number of temporary employees during the summer. These employees perform law enforcement, wildland fire suppression, structural fire prevention monitoring, building and fire security, emergency medical services, and search and rescue operations, often under very challenging conditions.

PLANNING AND RESOURCE MANAGEMENT

Park planning and resource management employees strive to increase understanding of the natural and cultural resources of the park and devise strategies for the public to interact with those resources in a manner that ensures

their preservation for future generations. Staff members monitor the park's wildlife, vegetation, and air and water quality. They assist in and monitor restoration efforts. They assess the historic and cultural sites located within the park for historic significance and make recommendations for their preservation. They add to knowledge and understanding of the park's natural and cultural resources by performing historical research and scientific studies and assisting and facilitating research and studies performed by cooperators who are interested in augmenting the work done by the Park Service. This knowledge is then applied, with the assistance of other park divisions, in a variety of restoration projects.

Planning and resource management staff also educate park staff on current issues affecting park resources, perform National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) compliance, and direct or participate in park planning efforts such as this study. Planning and resource management staff consists of natural and cultural resource specialists supplemented by a small number of temporary or volunteer technicians. These employees tend to be mainland-based but spend considerable amounts of time throughout the islands during the short summer field season. As with other park staff, transporting planning and resource management staff to the islands is a constant logistical challenge.

BUSINESS SERVICES

The business services division is responsible for park administrative functions including communications, information technology, financial management, procurement, and human resources. In 2008 there were six full-time-equivalent employees in the business services division. These employees are responsible for providing critical assistance and advice to park employees, helping the National Park Service meet its legal and fiscal responsibilities.

FACILITY MANAGEMENT

Facility management staff members care for an enormous variety of park developments and cultural resources. Historic preservation staff face the challenging task of slowing or preventing decay in the nearly 160 historic buildings and structures that are spread throughout the park, including the largest collection of lighthouses found anywhere in the national park system. Facility management crews build and maintain hiking trails (54 miles spread over 12 islands) and campsites (64 spread over 14 islands); repair docks (15 on 14 islands and one at Little Sand Bay); and maintain a wide variety of grounds, utility systems, and other visitor facilities distributed over a very large area. Facility management staff also are responsible for maintaining all of the park's housing quarters, as well as the visitor center at Stockton-Presque Isle.

Skilled in a variety of crafts and trades, facility management staff consist of permanent employees supplemented by temporary employees in the summer. Most facility management operations are not based on the islands. Rather, these staff members are almost in constant motion, regularly transporting themselves and others to the islands. Routine activities on the mainland, such as pumping outhouses or delivering propane, become adventures on islands in Lake Superior. Some of the facility management staff is devoted to simply keeping the park's aging fleet of more than 20 boats in safe, working order.

Island-based park staff on Stockton, Sand, Oak, and Rocky islands are housed in government owned housing on a seasonal basis. Raspberry Island staff reside in historic quarters at the Raspberry Island light station, and volunteer lighthouse keepers are housed in a similar manner on Devils, Michigan, and Outer islands. Park staff at the Manitou Island fish camp are also housed in historic quarters.

SOCIOECONOMIC ENVIRONMENT

The primary geographic study area selected for the socioeconomic baseline is comprised of Bayfield and Ashland counties, Wisconsin. Although Apostle Island National Lakeshore’s socioeconomic influence certainly extends beyond these counties’ borders, it appears that most of the lakeshore’s demographic and economic effects occur locally, within communities adjacent to and close to the lakeshore, including, in particular, the communities of Bayfield, Washburn, and Ashland.

POPULATION AND DEMOGRAPHICS

Table 14 summarizes the population of Bayfield and Ashland counties from 1950 through 2006. The table indicates that during this period of more than 50 years, Bayfield County has had an increase in population over

the last 25 years. Ashland County’s population has been stable for the last 35 years.

ECONOMY

The largest employers in Bayfield County are County of Bayfield, Red Cliff Band- Lake Superior Chippewa, the Washburn school district, and the Bayfield school district. The major industries of the county are educational services, general government, accommodations, and food services. In Ashland County the prominent employers are the Bad River Band-Lake Superior Chippewa, Memorial Medical Center, CG Bretting Manufacturing Company Inc., and the Ashland school district. Educational services, general government, food services, and wood product manufacturing are the major industries of Ashland County.

Table 14: Summary of Ashland and Bayfield Counties Population, 1950–2006

Year	Bayfield County Population	Ashland County Population
1950	13,760	19,461
1960	11,910	17,375
1970	11,683	16,743
1980	13,822	16,783
1990	14,008	16,307
2000	15,013	16,866
2006 (U.S. Census Bureau est.)	15,147	16,511

Source: Department of Commerce, U.S. Census Bureau.

TRANSPORTATION

Bayfield and Ashland counties are in northern Wisconsin. The area is crossed east to west by U.S. Highway 2, which provides access to the region from Duluth to the west. State Highway 13 runs south to north and links Ashland, Washburn, and Bayfield. The nearest commercial airport is 90 miles from Bayfield, in Duluth, Minnesota.

VISITOR SPENDING

Total visits to Apostle Island National Lakeshore were recorded as 182,396 in 2007. Of that total, 25,636 visits involved overnight stays. Visitor spending in the region was estimated at \$19.3 million, with \$15.3 million coming from nonlocal visitors.³ Nonlocal visitor spending is new money coming to the area, and results in more local income being generated and supports local jobs. Visitors supported an estimated 333 jobs and \$6.5 million in personal income. This is in addition to jobs and income associated with park operations and staff, which are discussed in the next section.

OPERATIONS SPENDING

The annual budget of the national lakeshore provides income to employees who go on to spend in the regional economy. The budget also includes spending for utilities payments, leasing, supplies, and local services, which support regional sales, jobs, and income. The effects of these amounts are in addition to effects of spending by visitors.

The staff working at Apostle Islands National Lakeshore is employed by the National Park Service. Payroll in 2007 was \$2.1 million, plus benefits for 43 NPS full-time-equivalent employees. This spending generates an estimated additional \$3.1 million in local incomes and 60 jobs.⁴

AUTHORIZED NPS BUSINESS PARTNERS

Business partners of the National Park Service provide a variety of ways to see and enjoy the Apostle Islands National Lakeshore. They offer opportunities to learn, explore, and experience the park through unique and specialized trips, tours, adventures, and expeditions. There are a number of commercial, public, and private companies and organizations that are authorized to operate within the park under terms of a commercial use authorization or special use permit. These include adventure tours; water taxi service; guided canoe and kayak expeditions; guided fishing charters; guided sailing charters; SCUBA and diving services; and university, recreational, and youth camps. A concessioner also provides a variety of excursion trips to the islands from Bayfield.

³ Visitor spending impacts were calculated using the Money Generation Model 2 (MGM2) developed for the Park Service by Michigan State University.

⁴ The impacts of operations spending in the regional area are estimated each year by Michigan State University.

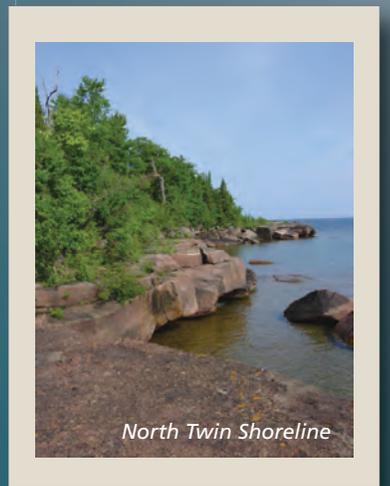


Stockton Lagoon



Long Island

CHAPTER 5: ENVIRONMENTAL CONSEQUENCES



North Twin Shoreline

INTRODUCTION

The National Environmental Policy Act requires that environmental documents discuss the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided. In this case, the proposed federal action would be the adoption of a new general management plan for Apostle Islands National Lakeshore. This chapter analyzes the environmental impacts of implementing the four alternatives on natural resources, cultural resources, visitor experience, and park operations. The analysis is the basis for comparing the beneficial and adverse effects of implementing the alternatives.

Because of the general, conceptual nature of the actions described in the alternatives, the impacts of these actions are analyzed in general qualitative terms. Thus, this environmental impact statement should be considered a programmatic analysis. For the purposes of analysis, it is assumed that all of the specific actions proposed in the alternatives would occur during the life of the plan.

This environmental impact statement generally analyzes several actions, such as the restoration of light stations, development of a new visitor center, relocation of the Stockton Island – Presque Isle campsites, and the extension of the mainland lakeshore trail. Other general actions noted in the alternatives, such as future rerouting of island trails and campsite relocations for resource protection purposes, are considered operational mitigative measures and are not evaluated here. The locations of a number of proposed developments in the alternatives, such as a new operations center and new island day use areas and campsites, are not identified. If and when proposed site-specific developments or other actions are ready for implementation following the approval of the general management plan, appropriate

detailed environmental and cultural compliance documentation would be prepared. This compliance would be in accordance with the National Environmental Policy Act of 1969 and the National Historic Preservation Act of 1966, both as amended, and would meet requirements to identify and analyze each possible impact for the resources affected.

This chapter begins with a description of the methods and assumptions used for each impact topic. Impact analysis discussions are organized by alternative and then by impact topic under each alternative. The existing conditions for all of the impact topics that are analyzed were identified in the “Affected Environment” chapter. All of the impact topics are assessed for each alternative.

The analysis of the no-action alternative (the continuation of current management) identifies the future conditions in the park if no major changes to facilities or NPS management occurred. The three action alternatives are then compared to the no-action alternative to identify the incremental changes in conditions that would occur because of changes in park facilities, uses, and management. Impacts of recent decisions and approved plans, such as the 2007 *Wildlife Management Plan and Environmental Assessment for Harvestable Species*, are not evaluated as part of this environmental analysis. Although these actions would occur during the life of the general management plan, they have been evaluated in other environmental documents.

Each alternative discusses cumulative impacts; these are identified when this project is considered in conjunction with other actions occurring in the region. The discussion of cumulative impacts is followed by a conclusion statement. The impacts of each

CHAPTER 5: ENVIRONMENTAL CONSEQUENCES

alternative are briefly summarized at the end of the “The Alternatives” chapter.

METHODS AND ASSUMPTIONS FOR ANALYZING IMPACTS

The planning team based the impact analysis and the conclusions in this chapter primarily on the review of existing literature and studies, information provided by experts in the National Park Service and in other agencies, and staff insights and professional judgment. The team's method of analyzing impacts is further explained below. It is important to remember that all the impacts have been assessed assuming that mitigating measures would be implemented to minimize or avoid impacts. If mitigating measures described in the "Alternatives, Including the Preferred Alternative" chapter were not applied, the potential for resource impacts and the magnitude of those impacts would increase.

In the analysis of impacts for alternatives 2, 3, and 4 it is assumed that it would be feasible and cost-effective to rehabilitate the triplex for staff housing on Long Island. If it proves to be either infeasible or cost-prohibitive, then other options would be evaluated to provide an NPS presence on the island.

The environmental consequences for each impact topic were identified and characterized based on impact type, intensity, context, and duration.

Impact intensity refers to the degree or magnitude to which a resource would be beneficially or adversely affected. Each impact was identified as negligible, minor, moderate, or major, in conformance with the definitions for these classifications provided for each impact topic (see table 15). Because this is a programmatic document, the intensities were expressed qualitatively.

Context refers to the setting within which an impact may occur, such as the affected region or locality. In this document most impacts are

either localized (site-specific) or park-wide. Cumulative impacts are either park-wide or regional.

Impact duration refers to how long an impact would last. The planning horizon for this plan is approximately 20 years. Unless otherwise specified, in this document the following terms are used to describe the duration of the impacts:

Short-term: The impact would be temporary in nature, lasting one year or less, such as the impacts associated with construction.

Long-term: The impact would last more than one year and could be permanent in nature, such as the loss of soil due to the construction of a new facility. Although an impact may only occur for a short duration at one time, if it occurs regularly over a longer period of time the impact may be considered to be a long-term impact. For example, the noise from a vehicle driving on a road would be heard for a short time and intermittently, but because vehicles would be driving the same road throughout the 20-year life of the plan, the impact on the natural soundscape would be considered to be long term.

Effects also can be direct or indirect. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. This document discloses and analyzes both direct and indirect effects, but does not differentiate between them in the discussions in order to simplify the narrative.

The impacts of the action alternatives describe the *difference between* implementing the no-

action alternative and implementing the action alternatives. To understand a complete “picture” of the impacts of implementing any of the action alternatives, the reader must also take into consideration the impacts that would occur in the no-action alternative.

NATURAL RESOURCES

Analysis of natural resources (soils, geological and coastal processes, water quality, wetlands, floodplains, terrestrial vegetation, terrestrial wildlife, threatened and endangered species, and soundscapes) was based on research, knowledge of the area’s resources, and the best professional judgment of planners, natural resource specialists, and biologists who have experience with similar types of projects. Information on the area’s natural resources was gathered from several sources. As appropriate, additional sources of data are identified under each topic heading.

WILDERNESS CHARACTER

Based on the Wilderness Act’s mandate to preserve wilderness character, this impact topic focuses on the extent to which the alternatives affect these characteristics of the Gaylord Nelson Wilderness area. (For more information on what wilderness character is, see chapter 2.) Wilderness character and wilderness experience are analyzed together because much of wilderness character can only be subjectively determined by the visitor’s experience (for example, solitude or freedom of movement). Impacts on natural and cultural resources, visitor access, soundscape, and other resources in the wilderness area are evaluated elsewhere in the environmental consequences chapter.

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT AND IMPACTS TO CULTURAL RESOURCES

In this environmental assessment impacts to cultural resources are described in terms of type, context, duration, and intensity, which is

consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). These impact analyses are intended, however, to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation’s regulations implementing Section 106 of the NHPA (36 CFR 800, *Protection of Historic Properties*), impacts to cultural resources were also identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected national register-eligible or national register-listed cultural resources; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council’s regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected national register-listed or national register-eligible cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register of Historic Places, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance) of its location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance or be cumulative (36 CFR 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish the characteristics of the cultural resource that qualify it for inclusion in the national register.

CEQ regulations and the National Park Service’s Director’s Order 12: “Conservation Planning, Environmental Impact Analysis and Decision Making” also call for a discussion of

mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g., reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Cultural resources are non-renewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions determined to have an adverse effect under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis sections. The Section 106 summary is an assessment of the effect of the undertaking (implementation of the alternative), based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

VISITOR USE AND EXPERIENCE

This impact analysis considers various aspects of visitor use and experience at Apostle Islands National Lakeshore, including the following:

- ability to access the park, including universal access
- lake and island related recreational opportunities and experiences
- mainland recreational opportunities and experiences
- opportunities to understand the significant stories of the Apostle Islands
- visitor safety

The analysis is primarily qualitative rather than quantitative due to the conceptual nature of the alternatives. Impacts on visitor use and experience were determined considering the best available information. Information on

visitor use and opinions was taken from a relatively recent survey of visitors conducted by the University of Idaho Park Studies Unit in the summer of 2004 (Littlejohn and Hollenhorst 2004). Other relevant studies that were analyzed include a long-term visitor study (Kuentzel and Heberlein 2003) that examined visitor use in the Apostle Islands in 1975, 1985, and again in 1997, as well as a visitor study in 2001, conducted by Dr. Ingrid Schneider and Raintry Salk, that examined the trip patterns of over 200 Apostle Island campers, among other study objectives.

Other information that was considered in the analysis includes the park's annual reporting of visitor use levels, including overnight stays, to the National Park Service's Public Use Statistics Office, and local and regional travel and tourism data. All of this background data was supplemented by information gathered during the planning process for this management plan, including opinions from park visitors and neighbors, and information from park staff.

PARK OPERATIONS

The impact analysis evaluated the effects of the alternatives on park operations, including staffing, infrastructure, maintenance, visitor facilities, and services.

The analysis focused on how park operations and facilities might vary with the different management alternatives. The analysis is qualitative rather than quantitative because of the conceptual nature of the alternatives. Consequently, professional judgment was used to reach reasonable conclusions as to the intensity, duration, and type of potential impact.

It should be noted that the Roys Point area, which includes key facilities for park maintenance and operations, is leased. It is not certain what will happen to this area after the lease expires in the near future. This analysis assumes that, under all of the alternatives, the functions that are now associated with Roys

Point would continue, although the location may change.

- changes in the levels of visitor use at the park

SOCIOECONOMIC ENVIRONMENT

Recreation-related tourism is an important element of the regional economy, which for the purposes of this analysis includes Ashland and Bayfield Counties. Thus, any changes to the park that affect local businesses and the economy of Bayfield and other communities are of special interest.

Implementation costs of the alternatives, including staffing, operations, and capital construction and maintenance, were estimated based on current budgets and actual project costs at the park and other NPS units. Actual future outlays would reflect future NPS policies, actual on-the-ground conditions, unanticipated events and opportunities, and budgets approved by Congress for the National Park Service in general, or Apostle Islands National Lakeshore specifically.

The analytical approach used in this analysis considers the following three main factors in the alternatives:

The analysis of socioeconomic effects is qualitative rather than quantitative because of the general conceptual nature of the alternatives. Consequently, professional judgment was used to reach reasonable conclusions regarding the intensity, duration, and type of potential impact.

- projected future expenditures for construction, rehabilitation, restoration and maintenance of facilities and infrastructure
- changes in staffing and federal spending to operate the park

Table 15: Impact Threshold Definitions

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>NATURAL RESOURCES – Soils</p> <p><i>Short-term</i> effects would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term</i> effects would last more than one year and could be permanent.</p>	<p>The action would result in a change in a soil, but the change would be at the lowest level of detection.</p>	<p>The action would result in a detectable change, but the change would be slight and local. There could be changes in topsoil in a relatively small area, but the change would not increase the potential for erosion.</p>	<p>The action would result in a clearly detectable change in a soil. There could be a loss or alteration of the topsoil in a small area, or the potential for erosion to remove small quantities of additional soil would increase.</p>	<p>The action would result in the permanent loss or alteration of soils in a relatively large area, or there would be a strong likelihood for erosion to remove large quantities of additional soil as a result of the action.</p>
<p>NATURAL RESOURCES – Geological and Coastal Processes</p> <p><i>Short-term</i> effects would be temporary, lasting a year or less, such as effects associated with</p>	<p>The action would result in changes to park geologic/coastal processes, but the changes would be barely detectable based on standard scientific methodologies.</p>	<p>The action would result in detectable changes, but the changes in geologic/coastal processes would be slight and localized, possibly showing small disruptions or improvements. No</p>	<p>The action would result in a clearly detectable change in geological and coastal processes—a geologic feature or process would be obviously altered, or a few features would show changes in a</p>	<p>The action would result in clearly detectable changes in key geological and coastal processes—important geologic/coastal processes or features would be disrupted or restored, or there would be</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>construction.</p> <p><i>Long-term</i> effects would last more than one year and could be permanent.</p>		<p>changes to key geologic and coastal processes would occur.</p>	<p>localized area. The changes could result in disruption or restoration of key coastal and geologic processes.</p>	<p>highly noticeable, widespread changes in many processes and features.</p>
<p>NATURAL RESOURCES –Water Quality</p> <p><i>Short-term</i> effects would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term</i> effects would last more than one year and could be permanent</p>	<p>Changes would be either barely detectable or would have effects that would be considered slight and localized.</p>	<p>An action would have measurable effects on water quality in a localized area and may affect a few organisms.</p> <p>Alternatively, an impact would be visible to a few visitors.</p>	<p>An action would have clearly detectable effects on water quality and potentially would affect organisms or natural ecological processes.</p> <p>Alternatively, an impact would be visible to visitors.</p>	<p>An action would have substantial effects on water quality and would affect organisms or natural ecological processes.</p> <p>Alternatively, an impact would be easily visible to visitors.</p>
<p>NATURAL RESOURCES – Wetlands</p> <p><i>Short-term</i> effects would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term</i> effects would last more than one year and could be permanent</p>	<p>Changes would be barely detectable and would have effects that would be considered slight and localized. There would be no measurable or perceptible changes in wetland size, integrity, or function.</p>	<p>Changes would be measurable in a relatively small, localized area. There could be barely perceptible changes to the wetlands’ integrity and function.</p>	<p>Changes would be readily apparent in a relatively small, localized area. There could be a small change in the wetlands’ integrity and function, including a small loss in acreage.</p>	<p>Changes would be readily apparent over a relatively large area, and would be highly noticeable. The change would substantially alter the wetlands’ integrity and function, including a large loss in acreage.</p>
<p>NATURAL RESOURCES – Floodplains (including flooding)</p> <p><i>Short-term</i> effects would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term</i> effects would last more than one year and could be permanent.</p>	<p>The action would result in a barely perceptible change in natural floodplain values (e.g., river processes or aquatic habitat) and the ability of the floodplain to function naturally. There would be essentially no increase in risk to life or property.</p>	<p>The action would slightly degrade natural floodplain values (e.g., river processes or aquatic habitat) in a localized area, and there could be minimal changes to floodplain function. There would be a slight increase in the risk of damage to property, but there would be essentially no change in risk to life.</p>	<p>The action would interfere with natural floodplain values (e.g., river processes or aquatic habitat) in a substantial way or in a large area. Floodplain function would be measurably affected. There would be a noticeable increase in the risk to life and/or property.</p>	<p>The action would substantially alter natural floodplain values, including natural river processes or aquatic habitat. Floodplain function would be substantially altered. There would be a substantial increase in the risk that severe damage to property would occur as well as a substantial increase in risk to life.</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>NATURAL RESOURCES – Terrestrial Vegetation and Wildlife (<i>threshold definitions are the same for both vegetation and wildlife</i>)</p> <p><i>Short-term</i> effects would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term</i> effects would last more than one year and could be permanent.</p>	<p>The action might result in a change in vegetation or wildlife, but the change would not be measurable or would be at the lowest level of detection.</p>	<p>The action might result in a detectable change, but the change would be slight and have a local effect on a population. This could include changes in the abundance or distribution of individuals in a local area, but not changes that would affect the viability of local populations. Changes to local ecological processes would be minimal.</p>	<p>The action would result in a clearly detectable change in a population and could have an appreciable effect. This could include changes in the abundance or distribution of local populations, but not changes that would affect the viability of regional populations. Changes to local ecological processes would be of limited extent.</p>	<p>The action would be severely adverse or exceptionally beneficial to a population. The effects would be substantial and highly noticeable, and they could result in widespread change. This could include changes in the abundance or distribution of a local or regional population to the extent that the population would not be likely to recover (adverse) or return to a sustainable level (beneficial). Key ecological processes would be altered, and “landscape-level” (regional) changes would be expected.</p>
<p>NATURAL RESOURCES – Threatened & Endangered Species</p>	<p>The action could result in a change to a population or individuals of a species or designated critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence and would be well within natural variability. This impact intensity equates to a U.S. Fish and Wildlife Service “may affect, not likely to adversely affect” determination.</p>	<p>The action could result in a change to a population or individuals of a species or designated critical habitat. The change would be measurable, but small and localized and not outside the range of natural variability. This impact intensity equates to a U.S. Fish and Wildlife Service “may affect, not likely to adversely affect” or a “likely to adversely affect” determination.</p>	<p>The action could result in a detectable change to a population or individuals of a species or designated critical habitat. Changes to the population or habitat might deviate from natural variability but the changes would not threaten the continued existence of the species in the park. This impact intensity equates to a U.S. Fish and Wildlife Service “may affect, not likely to adversely affect” or a “likely to adversely affect” determination.</p>	<p>The action would result in a noticeable effect on the viability of a population or individuals of a species or designated critical habitat. Considerable changes may occur during key time periods for a species. Changes to the population or habitat would substantially deviate from natural variability and threaten or help ensure the continued existence of the species in the park. A major adverse impact would be considered a “take” situation and would equate to a U.S. Fish and Wildlife Service “likely to adversely affect” determination.</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>NATURAL RESOURCES – Natural Soundscape</p> <p><i>Short-term</i> effects would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term</i> effects would last more than one year and could be permanent.</p>	<p>The natural soundscape might be affected, but the effects would be at or below the level of audibility, or changes in the soundscape would be so slight they would not be of any measurable or perceptible consequence to wildlife or visitors.</p>	<p>A change in the natural soundscape would be audible, but the effects would be small, local, and of little consequence to wildlife or visitors.</p>	<p>A change in the natural soundscape would be readily audible, affecting the behavior of wildlife or visitors in a large area.</p>	<p>A severely adverse or exceptionally beneficial change in the natural soundscape would be obvious and would affect the health of wildlife or visitors; or cause a substantial, highly noticeable change in the behavior of wildlife or visitors in a local or regional area.</p>
<p>WILDERNESS CHARACTER</p> <p><i>Short-term</i> effects would last less than one year and would affect only one season of visitor use.</p> <p><i>Long-term</i> effects would last more than one year and would be more permanent in nature.</p>	<p>Effects on opportunities for solitude or primitive and unconfined recreation would be confined to a small, localized area; any changes would be barely perceived, if at all, by most visitors. Any changes in the prevalence of natural conditions due to human-caused actions would be confined to a small, localized area; the vast majority of the wilderness area would continue to be primarily affected by forces of nature.</p>	<p>Effects on opportunities for solitude or primitive and unconfined recreation would be slightly beneficial or adverse and confined to a limited area of the wilderness area, such as along a single trail or an area of less than 100 acres; changes would be perceived by some visitors. Changes in the prevalence of natural conditions due to human-caused actions (either beneficial or adverse) would be apparent but confined to limited areas of the wilderness; natural conditions would predominate.</p>	<p>Effects on opportunities for solitude or primitive and unconfined recreation (beneficial or adverse) would be apparent to many visitors in limited areas of the wilderness. Changes in the prevalence of natural conditions due to human-caused actions (beneficial or adverse) would be readily apparent in limited areas of the wilderness; natural conditions would continue to predominate overall.</p>	<p>Effects on opportunities for solitude or primitive and unconfined recreation would be obvious to most visitors throughout the wilderness area.</p> <p>Changes in the prevalence of natural conditions due to human-caused actions would be readily apparent throughout the wilderness.</p>
<p>CULTURAL RESOURCES – Archeological Resources</p>	<p>Impact(s) is at the lowest level of detection with no perceptible consequences. For purposes of Section 106, the determination of effect would be no adverse effect.</p>	<p>Impacts would be detectable and measurable but would not diminish the overall integrity of the resource. For purposes of Section 106, the determination of effect would be no adverse effect.</p>	<p>Impacts would result in loss of overall integrity that would consequently jeopardize a site's National Register eligibility. For purposes of Section 106, determination of effect would be adverse effect.</p>	<p>Impacts would result in the loss of most or all of the site, to the extent that it would no longer be eligible for National Register listing. For purposes of Section 106, the determination of effect would be adverse effect.</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>CULTURAL RESOURCES – Historic Structures and Cultural Landscapes</p>	<p>Impacts would be at the lowest levels of detection with no perceptible consequences. For purposes of Section 106, the determination of effect would be no adverse effect.</p>	<p>Impacts would affect character defining features, elements or landscape patterns but would not diminish the overall integrity of the resource. For purposes of Section 106, the determination of effect would be no adverse effect.</p>	<p>Impacts would alter character defining features, elements or landscape patterns, diminishing the overall integrity of the resource to the extent that its National Register eligibility could be jeopardized. For purposes of Section 106, the determination of effect would be adverse effect.</p>	<p>Impacts would alter character defining features, elements or landscape patterns, diminishing the integrity of the resource to the extent that it would no longer be eligible to be listed on the National Register. For purposes of Section 106, the determination of effect would be adverse effect.</p>
<p>CULTURAL RESOURCES – Ethnographic Resources</p>	<p>Impacts would be at the lowest levels of detection and barely perceptible. Impacts would neither alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group’s body of practices and beliefs. For purposes of Section 106, the determination of effect would be no adverse effect.</p>	<p>Impacts would be slight but noticeable and would neither appreciably alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the group’s body of beliefs and practices. For purposes of Section 106, the determination of effect would be no adverse effect.</p>	<p>Impacts would be apparent and would alter resource conditions or interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group’s beliefs and practices, even though the group’s practices and beliefs would survive. For purposes of Section 106, the determination of effect would be adverse effect.</p>	<p>Impacts would alter resource conditions. Proposed actions would block or greatly affect traditional access, site preservation, or the relationship between the resource and the group’s body of beliefs and practices to the extent that the survival of a group’s beliefs and/or practices would be jeopardized. For purposes of Section 106, the determination of effect would be adverse effect.</p>
<p>VISITOR USE AND EXPERIENCE</p> <p><i>A short-term impact would last less than one year and would affect only one season’s use by visitors.</i></p> <p><i>A long-term impact would last more than one year and would be more permanent in nature.</i></p>	<p>Most visitors would likely be unaware of any effects associated with implementation of the alternative.</p>	<p>Changes in visitor opportunities and/or setting conditions would be slight but detectable, would affect few visitors, and would not appreciably limit or enhance experiences identified as fundamental to the park’s purpose and significance.</p>	<p>Changes in visitor opportunities and/or setting conditions would be noticeable, would affect many visitors, and would result in some changes to experiences identified as fundamental to the park’s purpose and significance.</p>	<p>Changes in visitor opportunities and/or setting conditions would be highly apparent, would affect most visitors, and would result in several changes to experiences identified as fundamental to park purpose and significance.</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>PARK OPERATIONS</p> <p>A <i>short-term</i> impact would last less than one year and would affect only one season of visitor use.</p> <p>A <i>long-term</i> impact would last more than one year and would be more permanent in nature.</p>	<p>The effect would be at or below the lower levels of detection, and would not have an appreciable effect on park operations.</p>	<p>The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on park operations.</p>	<p>The effects would be readily apparent and would result in a change in park operations in a manner noticeable to staff and the public.</p>	<p>The effects would be readily apparent and would result in a substantial change in park operations in a manner noticeable to staff and the public and be markedly different from existing operations.</p>
<p>SOCIOECONOMIC ENVIRONMENT</p> <p><i>Short-term</i> effects are those that occur during and in response to planning, design, construction and major maintenance of buildings, trails, parking lots and other facilities. These effects diminish or disappear after the activity is completed. Generally, “short-term” captures effects lasting up to five years.</p> <p><i>Long-term</i> effects are generally those lasting longer than five years, including some that may not begin until after completion of direct activities associated with the initial NPS spending or changes in management associated with an alternative.</p>	<p>Effects on adjacent land-owners, neighbors, businesses, agencies, community infrastructure, social conditions, etc. would be barely detectable, or detectable only through indirect means and with no discernible impact on the character of the social and economic environment.</p>	<p>Effects on adjacent landowners, neighbors, businesses, agencies, community infrastructure, social conditions, etc. would be small but detectable, geographically localized, affect few people, comparable in scale to typical year-to-year or seasonal variations, and would not alter the character of the social and economic environment.</p>	<p>Effects on adjacent landowners, neighbors, businesses, agencies, community infrastructure, social conditions, etc. would be readily apparent or observable across a wide geographic area and affect many people, and could have noticeable effects on the social and economic environment.</p>	<p>Effects on adjacent landowners, neighbors, businesses, agencies, community infrastructure, social conditions, etc., would be readily detectable or observable, affect a large segment of the population, extend across much of a community or region, and likely to have a substantial effect on the social and economic environment.</p>

IMPAIRMENT OF PARK RESOURCES

In addition to determining the environmental consequences of implementing the alternatives, NPS *Management Policies 2006* 1.4 requires analysis of potential effects to determine whether the alternatives would impair Apostle Islands National Lakeshore's resources and values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on resources and values. However, the laws give the National Park Service the management discretion to allow impacts on resources and values when necessary and appropriate to fulfill the purposes of the area, as long as the impact does not constitute an unacceptable impact or impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within a unit, that discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (NPS *Management Policies 2006*, 1.4.5). An impact on any resource or value may

constitute impairment. An impact would be more likely to constitute impairment if it results in a moderate or major adverse effect on a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the area;
- key to the natural or cultural integrity of the area or to opportunities for enjoyment of the area; or
- identified as a goal in the area's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the area, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park.

A determination on impairment is made in the "Conclusion" section for each required impact topic related to the park's resources and values. An evaluation of impairment is not required for topics related to visitor use and experience (unless the impact is resource based), NPS operations, or the socioeconomic environment. When it is determined that an action or actions would have a moderate to major adverse effect, an explanation is presented of why this would not constitute impairment. Impacts of only negligible or minor intensity would, by definition, not result in impairment. The impairment analysis for each of the impact topics has determined that none of the alternatives presented in this plan would result in impairment of park resources.

CUMULATIVE IMPACT ANALYSIS

A cumulative impact is described in the Council on Environmental Quality's regulation 1508.7 as follows:

Cumulative impacts are the impacts that result from incremental impacts of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.

Each cumulative impact analysis is additive, considering the overall impact of the alternative when combined with effects of other actions—both inside and outside the park—that have occurred or that would likely occur in the foreseeable future.

To determine potential cumulative impacts, past, present, and future potential actions and developments within and surrounding Apostle Islands National Lakeshore were considered by the planning team. The area included Ashland and Bayfield counties, Wisconsin.

In this case, most of the cumulative impacts that can be analyzed are due to actions that have occurred in the past. Apostle Islands National Lakeshore is a remote park. Most of the park's land base is wilderness, and its island location isolates it from other adjacent land uses. With a few exceptions, no new actions or developments are foreseen within or adjacent to the park that would affect park resources and uses. No new developments, including marinas, tourism developments, and roads on the mainland, or other changes in land ownership and management of adjacent lands are expected to occur that would directly or indirectly affect the park. No new uses of the park or changes in transportation

to the islands are considered likely, independent of what is proposed in the alternatives. Park visitation and the local resident population have been relatively stable and are not expected to substantially change over the timeframe being analyzed.

One action that likely will occur in the near future, independent of the general management plan, is the removal of the park housing unit and relocation or redesign of campsites at Quarry Bay on Stockton Island.

Another NPS action that has occurred in the past, and will likely occur in the future, is the restoration of native vegetation in areas that have been damaged or altered by people.

Several other non-NPS actions have occurred, and are likely to continue to occur, which would likely affect the park independent of this plan. The following actions were considered in the analysis of cumulative effects.

Nonnative species have been spreading in different locations in the park, such as Meyers Beach, due to past construction activities, visitor activities, and natural sources like wind and birds. The spread of nonnative species is likely to continue in the future.

As noted in the "Affected Environment" chapter, deer are spreading from the mainland to the islands in increasing numbers. Although NPS staff are taking steps to try to control deer numbers on the islands, this trend is likely to continue in the future.

Also as noted in the "Affected Environment" chapter, many potential sources of water pollution outside the park have been affecting and are likely to continue to affect the park's water quality. These sources include the discharge of treated wastewater from towns

and cities; runoff from agricultural, silvicultural, and quarrying operations; discharges from commercial cargo ships; pollution from recreational boats (tour boats and private boats) and marinas; stormwater discharges; and atmospheric deposition (e.g., polychlorinated biphenyls, mercury). These impacts have occurred and are likely to occur in the future.

Climate change is occurring in the Lake Superior region. As noted in “Chapter 1: Background,” climate change will likely result in many far-ranging, short- and long-term changes to the Lake Superior region and Apostle Islands National Lakeshore in particular. The effects of climate change are expected to affect the park, its resources, its visitors, and its management, in a multitude of ways.

Harsh climatic conditions contribute to adverse cumulative effects on the national

lakeshore’s historic buildings, structures and cultural landscape features. The long-term exposure of these properties to severe weather and storms can result in the loss and deterioration of building materials, fabric or other character-defining features, diminishing their historic integrity. As feasible, the national lakeshore implements necessary preservation and stabilization measures, often facing difficult logistical challenges and incurring the added expenses of transporting materials and staff from the mainland to the islands to carry out these measures. There is also an increased risk of fire damage to historic structures and contributing features where forest vegetation has encroached into formerly cleared areas around the light stations and other historic sites. Archeological and ethnographic resources are also subject to potential adverse cumulative impacts from erosion, ground-disturbance, visitor use impacts and other factors.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 1

NATURAL RESOURCES

Soils

Analysis. No soils would be altered due to the construction of new park facilities under alternative 1. Maintenance of existing facilities such as trails and campsites would probably result in some erosion or alteration of soil properties over time, resulting in a negligible to minor, long-term, adverse impact in localized areas.

Soils in areas that receive relatively high levels of use, such as light stations, docks, picnic areas, and campsites in Apostle Islands National Lakeshore would likely continue to be compacted and eroded by visitors. Some designated campsites probably would expand in area over time, and informal “zone” campsites would continue to be created or expanded on islands, resulting in changes to the topsoil in localized areas (e.g., loss of surface organic matter, reductions in surface organic horizons, compaction of mineral soil). The removal of large pieces of wood for campfires also can be detrimental to soil productivity (Hammit and Cole 1998). In some areas, user-created trails would continue to form, particularly in developed areas with higher visitor numbers. In sloped areas, these user-created trails would continue to result in increased soil erosion from stormwater runoff. Although park staff monitor for all of these impacts and take action to control them, visitor-caused impacts would be expected to continue. All of these long-term, adverse visitor impacts would likely be minor to moderate in intensity and be limited to popular areas, mostly along or near the shorelines of the islands.

Cumulative Impacts. Soils in much of Apostle Islands National Lakeshore probably have been altered by past activities (e.g.,

logging, agricultural practices). Some soils on lands adjacent to the mainland unit of the park may be lost or modified in the future due to new development. Also in the future, if the Quarry Bay campsites on Stockton Island were relocated, this would affect soils in a localized area. Assuming the campsites were relocated to a relatively undisturbed site, soils would be lost or modified. When these impacts are added to the continuing minor to moderate adverse impacts under the no-action alternative, there would be a long-term, minor to moderate, adverse cumulative impact on area soils—although the Quarry Bay action would add a very small increment to the overall cumulative impact.

Conclusion. Most of Apostle Islands National Lakeshore’s soils would not be affected by the actions under alternative 1. However, some soils would continue to be eroded and lost and soil properties in popular areas, such as around campsites near the lakeshore would continue to be altered due to visitor use. These adverse impacts would likely be minor to moderate and long term in extent. None of the expected impacts would be considered unacceptable. No impairment to Apostle Islands National Lakeshore’s resources and values would result from soil impacts under this alternative. When the impacts of alternative 1 are added to past and foreseeable future impacts (i.e., relocation of the campsites in Quarry Bay) there would be a long-term, minor to moderate, adverse cumulative impact on area soils.

Geological and Coastal Processes

Analysis. In the past, visitor use has affected the park’s sandscapes (see “Chapter 4: Affected Environment”). Although restoration efforts have been underway and would be expected to continue in the future on some sandscapes, such as Cat and Long islands,

other sandscapes would not receive sufficient management attention due to limited resources. With continuing visitor use of the islands' sandscapes and beaches, it is expected that the vegetative cover on some popular areas, such as the Raspberry and Ironwood sandspits, would continue to decline due to trampling, which in turn would increase the potential for wind and water erosion to affect the characteristics of some sandscapes (e.g., size, shape). The effect of these changes on the park's sandscapes over time would vary, depending on the level of use and environmental conditions, but could result in long-term, adverse impacts that would range from minor to moderate.

Erosion due to people climbing up and down lake banks also would continue, particularly at island campsites near the lakeshore, such as the Stockton Island campground. Although mitigative measures, such as the use of sand ladders and boardwalks, would help limit some of these bank impacts, the placement and maintenance of these structures would be limited to what the staff can accomplish with current resources. As a result, there would continue to be minor to moderate, adverse, long-term impacts in localized areas.

Although no new docks would be built under alternative 1, the existing docks would continue to affect coastal processes. As noted in the "Affected Environment" chapter, docks, especially those with solid cores, affect the movement of sand along the coastline, as has happened at the Little Sand Bay docks and the Michigan Island dock. Sediments would continue to be trapped by the docks and, therefore, would not be available to replenish downstream areas. Without this replenishment, Lake Superior currents and waves can erode beaches. Depending on the design, location, and extent of the docks, this could cause a moderate, long-term, adverse impact to the geomorphology of one or more of the park's sandscapes.

Cumulative Impacts. As noted above and in the "Affected Environment," coastal processes in the past have been altered in

specific areas, such as the installation of the dock at Michigan Island. Climate change is expected to affect lake levels and thus would affect coastal processes, including sediment transport and the park's sandscapes and beaches. Because the changes due to climate change in the park are unpredictable, both in their timing (whether they occur within the timeframe of this plan or beyond) and in magnitude or intensity of the impact—the effects of climate change on coastal processes could range from minor to major in intensity. When the effects of the actions in alternative 1 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact. But alternative 1 would add a very small increment when added to the potential effects of climate change.

Conclusion. Visitors would likely continue to affect the park's sandscapes and shorelines, resulting overall in a minor to moderate, long-term, adverse impact in localized areas of the islands. Loss of vegetation on some popular sandscapes would likely continue, increasing the potential for erosion and other changes to the existing sandscapes. Bank erosion also would likely continue to occur, particularly next to shoreline campsites. In addition, existing docks would continue to affect coastal processes, affecting the transport of sediments along the shoreline. When the effects of climate change are added to the effects of alternative 1, there would be the potential for a long-term, minor to major, adverse cumulative impact on coastal processes—although the actions in alternative 1 would add a very small increment to this overall impact. No unacceptable impacts or impairment to Apostle Islands National Lakeshore's resources and values would result from changes to coastal processes under this alternative.

Surface Water Quality

Analysis. Because no new facilities would be built under this alternative, no impacts to water quality would occur.

Visitors have likely affected water quality in localized areas through swimming and bathing, and through the disposal of human waste and trash. These activities can contribute to the degradation of water quality by increasing nutrient and bacteria levels, and the levels of other chemicals (e.g., petroleum-based products, sunscreen, and soaps). Some sedimentation also likely occurs at unsurfaced landings in localized areas where visitors put in and take out their boats and in areas where bank erosion is occurring due to visitors walking down steep slopes. With the very small changes in visitor use levels on the islands expected under this alternative, there would likely continue to be a negligible to minor, long-term, adverse impact to water quality in localized areas due to relatively low use levels and the dilution effect of Lake Superior. Most of these impacts would occur in areas where there are no outhouses, such as the campsites at the southern end of Basswood Island, and the beaches that receive a lot of kayak use.

It is likely that motorized boats are also affecting the park's water quality. Hydrocarbon engine and bilge emissions from private motorboats and NPS craft would continue at about existing levels under this alternative. Most motorized watercraft use inefficient two-stroke engines that lose about 30% of their fuel to the environment (California Environmental Protection Agency Air Resources Board). The primary pollutants of concern from marine engines in Lake Superior include MTBE (methyl tertiary butyl ether), PAHs (polyaromatic hydrocarbons), BTEX (benzene, toluene, ethylbenzene, and xylene) and heavy metals such as copper (NPS 2002d). However, the use of motorboats is relatively light, occurring primarily during the three summer months, and the large size of Lake Superior dilutes and disperses these pollutants. These factors probably limit the impacts of marine engines to minor, long-term impacts to water quality in the park. However, in areas that receive higher use levels, such as Presque Isle Bay and Little Sand Bay, particularly on weekends and holidays, there

could be minor to moderate, long-term impacts to water quality.

Cumulative Impacts. Several sources of water pollution external to Apostle Islands National Lakeshore have affected, and are likely to continue affecting, the water quality of the park. When added to the water quality impacts of alternative 1 being considered (negligible to minor, long-term, adverse impacts due to visitors), there could be a minor to major, long-term, adverse cumulative impact to the park's water quality, depending on the type and quantity of pollutants that enter park waters. However, the increment added by the alternatives would be relatively small compared to the impact from pollutants being added from actions outside the park boundary.

Conclusion. Under alternative 1 there would continue to be minor, long-term, adverse impacts to the park's water quality in localized areas, primarily due to visitor activities (e.g., swimming, disposal of human waste in areas without sanitary facilities, emissions from motorboats). In a few areas that receive heavier motorboat uses, such as Presque Isle Bay, minor to moderate, long-term, adverse impacts would be expected. When the effects of alternative 1 are added to the effects of water pollution from sources outside of the park, there would be the potential for a minor to major, adverse cumulative effect on the park's water quality. However, the actions in alternative 1 would add only a small increment to the overall cumulative impact. The level of impact to the park's water quality due to alternative 1 would not constitute an unacceptable impact and would not be considered an impairment of the park's resources and values.

Wetlands

Analysis. No developments would occur under alternative 1 that would have the potential to affect wetlands in the park. Some impacts would continue to occur due to people walking through the wetlands, trampling vegetation. But only a few people

would be expected to walk into the wetlands over the course of a year, resulting in negligible, short- and long-term, adverse impacts.

Cumulative Impacts. Climate change will likely affect the park's wetlands, including their species composition and water levels. For example, if the frequency or intensity of storms change, park wetlands could be affected. Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park's wetlands could range from minor to major in intensity. When the effects of alternative 1 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact on wetlands. But alternative 1 would add a very small increment to the potential effects of climate change on wetlands.

Conclusion. Alternative 1 would have a negligible, short- and long-term, adverse impact on the park's wetlands primarily due to people occasionally walking through the wetlands. When the effects of this alternative are added to the potential effects of climate change, there could be a minor to major, long-term, adverse cumulative effect on the park's wetlands, although alternative 1 would add a very small increment to the overall cumulative impact. The effects of this alternative would not result in unacceptable impacts or impairment of the park's resources and values.

Floodplains

Analysis. No new developments or other actions would occur in the Sand River floodplain, on the mainland, under alternative 1. Visitors would continue to walk through the floodplain, trampling vegetation. But with no trails in the area, only a few people would be expected to walk into the floodplains over the course of a year, resulting in negligible, short- and long-term, adverse impacts.

Cumulative Impacts. No past, present, or foreseeable actions within or outside the park are expected to affect the Sand River floodplain. Thus, there would be no additive cumulative effects on the floodplain.

Conclusion. Alternative 1 would continue to result in a negligible, short- and long-term, adverse impact due to people walking in the Sand River floodplain. No cumulative effects would be expected. The impacts of alternative 1 would not be considered unacceptable and the level of impact would not constitute an impairment of the park's resources and values.

Vegetation

Analysis. No impacts on vegetation would occur due to development or improvement of facilities in this alternative.

Visitor use of Apostle Islands National Lakeshore, including hiking and camping, would continue to affect the park's vegetation. With use levels expected to stay at present levels or slightly increase, some vegetation would likely be lost due to the continuing formation of user-created trails in popular use areas such as campsites and picnic areas. Vegetation along Lake Superior would continue to be trampled and damaged in places when visitors walk up and down the shoreline. Some plants would also probably continue to be lost through visitors walking on sensitive vegetation on sandscapes. Some existing designated campsites probably would expand in area over time, and informal campsites would continue to be created or expanded on islands, resulting in changes to and loss of vegetation in localized areas. If an area becomes cleared of vegetation due to the creation of a campsite(s), and if there were trees behind the cleared area and the beach, the trees would be more likely to be subject to blowdown. However, none of these impacts would affect the integrity, distribution, or presence of native plant communities in Apostle Islands National Lakeshore. Thus, visitor use would be expected to continue to have a long-term, negligible to minor, adverse

impact on the park's native vegetation in localized areas.

Cumulative Impacts. Several potential actions, independent of this plan, could affect the park's vegetation. As described in the "Affected Environment" chapter, much of the park's vegetation has been substantially altered by past human activities, including logging and fires, farming, the building of cabins, quarrying, and the development of roads and fish camps. The impacts of these past actions far outweigh the impacts of the actions being proposed in the alternatives in this plan.

In the future developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the loss and modification of vegetation in these areas. This would have a long-term, minor, adverse impact on natural vegetation in the vicinity of the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect vegetation in the area, which would add a minor, long-term, adverse incremental effect to the effects of alternative 1.

As noted in the "Affected Environment" chapter, the spread of nonnative plants is a problem in the park. Nonnative species have been spreading in different locations in the park, such as Meyers Beach, due to past construction activities, visitor activities, and natural sources like wind and birds. In addition, even with education efforts, some nonnative plants could be introduced or spread by visitors in the park, such as at picnic areas and campsites. It is difficult to determine the impact of these nonnative species on native vegetation due to the uncertainties about the type of species that might be introduced in the future, and the locations and frequencies of introductions. In spite of monitoring and weed control efforts, the adverse effect of the introduction and spread of nonnative species would be unknown, but

could range from minor to major and be long term in duration.

As noted in the "Affected Environment" chapter, deer are spreading from the mainland to the islands in increasing numbers. Increasing numbers of deer would browse the islands' native vegetation, reducing or eliminating such species as Canada yew, which could have a moderate to major, long-term, adverse impact on some native vegetation on the islands.

Climate change likely has affected and will continue to affect the park's vegetation, including species composition and population numbers. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the potential for wildfires and the spread of and seasons for insects, which in turn would have a minor to major, long-term, adverse impact on the park's native vegetation.

When the effects of all of these past and future actions are added to the effects of alternative 1, there would be a major, long-term, adverse, cumulative effect on the park's vegetation. However, the effects of alternative 1 would add a very small increment to the overall cumulative impact.

Conclusion. Alternative 1 would continue to result in a negligible to minor, long-term, adverse impact on the park's native vegetation, primarily due to past construction projects and visitor use (e.g., trampling of vegetation). When the effects of alternative 1 are added to other past, present and future actions occurring independent of this plan, such as climate change and the spread of nonnative species, a major, long-term, adverse impact would be expected to the park's native vegetation—although the effects of alternative 1 would add a very small increment to the overall cumulative effect. None of the vegetation impacts that would occur under this alternative would be unacceptable or sufficient to result in an impairment of

Apostle Islands National Lakeshore's resources and values.

Wildlife

Analysis. Few actions in this alternative would affect Apostle Islands National Lakeshore's wildlife populations or habitats. No impacts on wildlife would occur due to development or improvement of facilities in this alternative. The continuation of hunting and trapping would not be expected to adversely affect the park's populations, assuming that harvests stay at about existing levels and there was careful monitoring and enforcement of federal, state, and tribal regulations by park staff, the state of Wisconsin, and tribal wardens—no changes would be expected in the wildlife population levels in the park.

Wildlife populations, behaviors, and habitats already have been altered by visitors and employees, which would continue under alternative 1. Human use of the park would continue to be concentrated in areas such as the light stations, the islands' shorelines, and campsites. Animals sensitive to human presence and noise-generating activities already avoid these areas when people are present. Wildlife that occupy these areas, such as red squirrels, rabbits, mice, and white-tailed deer, are mostly adapted to the presence of people, but wildlife behavior is still being affected. Courtship, territory establishment, intra-species communication, predation and predator avoidance, and effective use of habitat could already have been affected by noise. That said, it is expected that wildlife in the above areas would not be noticeably affected by the actions being taken in alternative 1.

Bear-human conflicts could occur in the future in areas where visitors are camping, particularly at the Stockton Island – Presque Isle campground, which is good bear habitat. Because the campsites are stretched out along the beach, the potential for bear-human encounters and conflicts is high. Bears have entered campsites and damaged property. To

protect visitor safety, campsites have been closed to public use at times. Problem bears have been moved from this area and on one occasion killed. A combination of non-lethal deterrence, visitor education, and temporary closures have been successful in minimizing the number of native bear-human interactions. However, it is likely in the future that additional problem bears may need to be conditioned to avoid humans. This would result in a negligible long-term adverse impact.

Some animals would continue to occasionally be injured or killed by motor vehicles driving on roads in the mainland unit. Some animals such as mice, blue jays, bears, sea gulls, and red squirrels, also probably would continue to be attracted by visitors feeding them or to areas where food and garbage are left out. Even with continued efforts to educate the public on not feeding wildlife, negligible to minor adverse effects on wildlife would likely occur in localized areas from these activities.

Cumulative Impacts. Like vegetation, several potential actions, independent of this plan, could affect the park's wildlife. As described in the "Affected Environment," the loss of and/or changes in vegetation have affected the habitat for wildlife in the park (e.g., the spread of deer). Hunting also has affected wildlife in the past and present.

In the future developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the displacement of some wildlife and the loss and modification of wildlife habitat in these areas. In addition, noise generated by human activities in the vicinity of the islands, such as motorized watercraft, could also disturb or displace some wildlife, particularly if these uses were to increase. These actions would likely have a long-term, minor, adverse impact on wildlife populations in or near the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect wildlife

in the area, displacing some animals, which would add a minor, long-term, adverse incremental effect to the effects of alternative 1.

Climate change will also likely affect wildlife composition of the park. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the spread of and seasons for insects, which could benefit some wildlife species and adversely affect other species. (See the “Affected Environment” chapter for more information.) Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park’s wildlife could range from minor to major in intensity. When the effects of the actions in alternative 1 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact on the park’s wildlife populations. But alternative 1 would add a very small increment to the potential effects of climate change on wildlife.

Conclusion. Most wildlife in the park would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species. Long-term, negligible to minor, adverse impacts would continue to occur to wildlife due to continuing visitor use of the park. There would be the potential for a minor to major, long-term, adverse cumulative impact on the park’s wildlife when the effects of alternative 1 are added to the potential effects of climate change. But the increment added by alternative 1 to the overall cumulative impact would be very small. None of the wildlife impacts resulting from alternative 1 would be considered unacceptable or would constitute an impairment of the park’s resources and values.

Federal and State Threatened and Endangered Species

Analysis. No new actions or developments would occur under alternative 1 that would affect the federal and state endangered piping plovers in the park. Visitors and their dogs could disturb plovers. But with the low numbers of plovers scattered around the islands, and with continued efforts to protect nesting birds, including temporary closures at nesting locations, it is less likely that visitors would deliberately or accidentally disturb the birds. With current protection measures it is anticipated that visitor impacts would be infrequent. If visitor use impacts were identified in the future, the park staff would consult with the U.S. Fish and Wildlife Service to identify and implement additional appropriate mitigative measures. Consequently, under alternative 1 visitors might affect, but would not likely adversely affect, piping plovers in the park.

With regard to the wolf, neither visitors nor NPS actions are believed to be affecting use of the park by wolves. No new actions or developments would occur in this alternative that would affect wolf habitat. As noted in the “Affected Environment,” the park is a very small part of the range of the area used by wolves, and wolves that use the park are transient. The absence of deer on most of the islands, and the high number of deer on the mainland, would keep wolves from spending much time in the park. The winter is the most likely time wolves would be in the park, when visitation levels are low. Visitor use levels may increase in the future and it is possible, albeit unlikely, that some visitors might see a wolf in the mainland unit and might change its behavior. But this would not be expected to stop wolves from coming into the area or change their numbers, distribution, or use of the park. Any adverse impacts that would occur would be negligible and long term due to the potential for infrequent encounters to occur over the life of the plan.

Cumulative Impacts. As described in the piping plover recovery plan, increasing habitat loss, recreational pressure, predation, and contaminants are likely responsible for continuing population declines of the piping plover throughout its range (USFWS 2003). Outside of the park, habitat loss and modification has historically affected the Great Lakes region, although this impact is now thought to be occurring at a much reduced level (J. Trick, biologist, U.S. Fish and Wildlife Service, pers. comm., 10-22-2008). Predation and disease, the use of motorized vehicles on beaches, recreational activities on beaches (e.g., beach walking, bike riding) likely will continue to affect the birds. Contaminants, pollution, and noise from human activities within and outside the park also may be affecting the species, although this is unknown. Although actions are being taken to protect piping plovers and their species, such as controlling human access to nesting areas and educating the public, the species is likely to continue to be imperiled during the life of this plan.

Independent of the plan, park staff would continue to monitor and protect all piping plover nest sites.

Wolves have been increasing in Wisconsin, and no known developments or actions are expected to affect the wolf population, habitat, and prey on the Bayfield Peninsula. Although it is possible that the wolf may be delisted as a federally endangered species in the future, which may result in the removal of some wolves in the state, this would not be expected to affect the overall wolf population in the region of the park.

Adding the effects of actions occurring outside the park to alternative 1 would not result in any cumulative effects on the piping plover or gray wolf. This is because the alternative does not include any actions that would contribute or add to the effects of other actions in and outside the park.

Conclusion. No new developments or actions would occur under alternative 1 that would

have the potential to affect the piping plover or wolves in the park. Visitor use on island beaches would continue to have the potential to disturb the plovers, but with current protection measures, impacts would be expected to be negligible. Rare encounters of wolves and visitors may have a negligible adverse impact on a few wolves in the area, but this would not affect the overall population. Thus, alternative 1 may affect, but would not adversely affect, the park's piping plovers and wolves. No cumulative impacts would result from alternative 1 and no impacts would occur that would be considered unacceptable or result in an impairment of the park's resources and values.

Natural Soundscape

Analysis. Noise from NPS maintenance and management activities, such as trail maintenance, grass mowing, pumping of vault toilets, and restoration activities, would continue to be heard occasionally on the park's islands. Most noise from these activities would be in or near developed areas that are already exposed to noise from vehicles, motors, and visitors. Overall, noise from ongoing maintenance and restoration activities would have a minor to moderate adverse impact on the natural soundscape in local areas, depending upon the activity, presence of other facilities and people, vegetation, and wind. The impacts would be of short duration, but because they would occur over the life of the plan, the impacts would be long term.

Under alternative 1, during much of the year, there would continue to be few noises because there would be few people. However, during the peak use season there would continue to be moderate levels of noise due to visitors and motorboats stopping at the islands. Noise levels would be most noticeable primarily in developed areas and popular use areas, such as the light stations, anchorages, or docks at Rocky, South Twin, Raspberry, Oak, and Sand islands; the visitor center and campground on Stockton Island; Little Sand Bay Visitor Center; and Meyers Beach launch area.

Depending on winter conditions, noise levels would also likely be moderate at times at Meyers Beach with visitors going out to see the ice caves. These impacts would be brief, but would increase in intensity and duration during holidays and weekends when high numbers of visitors are present. Noise from regular concessioner island cruise service in the summer to Raspberry, Stockton, and Oak islands also would continue, with large groups of people disembarking on these islands. Thus, there would continue to be long-term, minor to moderate, adverse noise impacts in local areas on the mainland and most islands throughout Apostle Islands National Lakeshore.

Cumulative Impacts. Noise from outside the park has affected the park's soundscape in the past and will continue to do so in the future. As described in the "Affected Environment" chapter, depending on location and wind direction, common human-caused sounds including engines from watercraft passing near the park, vehicles on roads on the mainland, sounds from logging operations, and urban sounds from Bayfield would continue to be heard in the park. Noise from the concession boat would continue to be heard not just at the islands it visits but also on the islands it passes by. In the winter, noise from snowmobiles passing by the park would continue to be heard.

It is possible in the future that events like the speedboat "poker run" and other unregulated activities may occur just outside the park boundary, generating substantial noise. In addition, developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in noise during and after the construction period in these areas.

These adverse noise impacts would be minor to moderate (depending upon the type of noise and location), intermittent, and long term—occurring every year.

When these impacts are added to the continuing impacts of alternative 1 there

would be the potential for a long-term, minor to moderate, adverse cumulative impact on the natural soundscape. However, these cumulative impacts would primarily occur at certain times in the summer, such as weekends. The actions in alternative 1 would add a very small increment to the overall cumulative impact.

Conclusion. Alternative 1 would continue to result in long-term, minor to moderate, adverse noise impacts in local areas on the mainland and most islands in Apostle Islands National Lakeshore, particularly in developed areas. These impacts would be primarily due to visitor use and NPS maintenance and management activities. None of these noise impacts, however, would be unacceptable or be sufficient to result in an impairment of the park's resources and values. There would be the potential for a long-term, minor to moderate, adverse cumulative impact to the soundscape when the noise resulting from implementing this alternative is added to noise from activities outside of the park. But the increment added by alternative 1 to the overall cumulative impact would be very small.

WILDERNESS CHARACTER

Analysis. Under alternative 1, no changes in management would occur in the Gaylord Nelson Wilderness—the area would continue to be managed as it is now. Although island use levels might slightly increase over time, most of these visitors would likely stay in developed areas and on the park shoreline, and not venture into the wilderness area.

Alternative 1 also would not change the undeveloped or natural character of the wilderness area. No new developments or human occupation would occur in the wilderness area. Signs of people, including hiking trails, campsites, and some historic structures, would continue to be evident, as would occasional user-created trails and trampled vegetation/bare ground from informal campsites. But most visitors in this alternative would continue to find what they

perceive to be natural conditions in most of the wilderness area—visitors would continue to find a forested landscape generally untrammelled by people, with few obvious signs of disturbance or alteration. Thus, alternative 1 would have no effect on the apparent naturalness of the area.

The vast majority of the wilderness area would remain untrammelled in this alternative. There would continue to be little to no notable NPS presence (in the form of regulations, infrastructure, management activity, or personnel) on the islands, with the exception of infrequent backcountry ranger patrols. Activities that are nonconforming but allowed, such as nonnative species control and other resource management activities, would continue to occur in localized areas and have a trammeling effect. This alternative would result in a continuation of some adverse effects from nonconforming uses, but would not result in any new impacts to the untrammelled nature of the wilderness area.

There would be no change in the opportunities for solitude in the wilderness area under alternative 1. Most of the wilderness area would receive very low use. There would continue to be a few places where relatively large groups of people (10-30+) may gather in the wilderness area, particularly on weekends and holidays; these areas would be the Oak Island group campsite and sandspit, and the beaches on the southeast side of Raspberry Island and the north side of York Island. In these areas opportunities for solitude would continue to be diminished.

Continuing current management practices would not alter opportunities for primitive recreation in the wilderness area. Opportunities for primitive, unconfined recreation would continue to be present on most of the islands. Day-use visitors would have complete freedom to go wherever they pleased, except for the small number of areas that are closed for resource protection purposes (e.g., Gull and Eagle islands). For visitor safety and resource concerns, permits for overnight

camping at designated campsites and for zoned camping would continue to be required. Although most visitors would likely agree that there would be outstanding opportunities for primitive, unconfined recreation on the islands, permit and camping requirements would continue to slightly diminish these qualities, resulting in a minor, long-term, adverse impact.

Cumulative Impacts. Actions independent of this alternative have affected, and would likely continue to affect the wilderness character of the park. Noise generated from human activities outside of the park, such as motorized boats, would continue to affect some visitors' perceptions of solitude, resulting in a long-term, minor, adverse impact to wilderness character. As noted in the impact topics above, the spread of nonnative species and climate change have affected, and are likely to continue adversely affecting the park's biological communities—including the wilderness area—resulting in a long-term, minor to moderate, adverse impact to wilderness character (i.e., apparent naturalness of the wilderness areas). On the other hand NPS staff have worked to restore disturbed areas in wilderness and likely will continue to do so in the future. This would have a minor, long-term, beneficial impact on wilderness character.

When all of the above actions are added to the effects of alternative 1, there would be the potential for a minor to moderate, long-term, adverse cumulative impact on the wilderness character. However, alternative 1 would add a very small increment to the overall cumulative impact.

Conclusion. Alternative 1 would continue to result in a minor, long-term, adverse impact to the area's wilderness character, due to the continuing requirement to obtain a permit to camp in the wilderness. But assuming use levels do not substantially increase, in most of the wilderness area visitors would continue to find outstanding opportunities for solitude and primitive, unconfined recreation in what most people perceive to be a natural

landscape. No changes would occur with regard to the untrammeled character of the wilderness area.

None of these continuing impacts to wilderness character would be considered unacceptable. When the effects of actions occurring independent of the alternative are added to the effects of alternative 1 there would be the potential for a minor to moderate, adverse, cumulative effect on wilderness character—albeit alternative 1 would add a very small increment to this overall cumulative impact.

CULTURAL RESOURCES

Historic Structures / Cultural Landscapes

Light Stations

Under the no-action alternative, the national lakeshore staff would, as needed, stabilize and preserve its historic light stations in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. With particular regard to the standards and guidelines for preservation, the existing form, features, and architectural detailing of the light station buildings and structures would be retained. Preservation maintenance of character-defining features would be emphasized over replacement of historic fabric. Stabilization measures would be carried out to structurally reinforce, weatherize, and correct unsafe conditions. Other than proposed use at the Raspberry Island light station for seasonal NPS staff, no public overnight use would occur, and consequently there would be no need for interior rehabilitation of the light stations. As needed, shoreline stabilization would also be undertaken (such as that completed for the Raspberry Island and Outer Island light stations) to control erosion of the shoreline embankments that has threatened the historic structures. Implementation of these preservation and stabilization measures would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the historic light stations.

More extensive preservation treatments would be reserved for the Raspberry Island light station. This light station would remain the primary focus for interpreting the role of historic light stations in the Apostle Islands because of its relative accessibility and renown as a “showplace” property. Rehabilitation and restoration of the light tower and attached keeper’s quarters were undertaken in 2006 to address structural deterioration, enhance visitor interpretation, and provide for NPS seasonal employee housing. As funding permits, further rehabilitation of the Raspberry Island light station’s cultural landscape, including other outbuildings, would also be carried out in accordance with recommendations from the 2004 cultural landscape report, and the *Secretary of the Interior's Standards for the Treatment of Historic Properties (with Guidelines for the Treatment of Cultural Landscapes)*.

Implementation of these measures would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the Raspberry Island light station.

Although cultural landscape reports have not been completed for the remainder of the light stations, preservation and stabilization measures would be carried out as required to maintain the integrity of cultural landscape features identified as contributing to site significance (i.e., outbuildings, vegetation, walkways, tramways, docks, etc.). Vegetation clearing would only occur in the immediate vicinity of the light stations and contributing buildings. As a consequence, historic views may be obscured by trees and other vegetation encroaching into the larger surrounding areas historically reserved for the light stations. However, preservation and stabilization of cultural landscape elements associated with the light stations would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the historic properties.

Other Historic Structures / Cultural Landscapes

National register-listed or national register-eligible structures and buildings associated with historic farmsteads, tourism/recreational sites, fishing and logging camps, etc. would be preserved and stabilized in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Contributing cultural landscape features associated with these sites would also be preserved and stabilized. The historic Hokenson fishery on the mainland at Little Sand Bay may be considered in future planning for rehabilitation and adaptive use as a visitor center or contact facility. These actions would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on historic properties.

For properties currently under use and occupancy leases or life estates, the park would prioritize and determine ultimate preservation treatments following the termination of existing private leases. Properties listed in or eligible for the national register could be considered for adaptive use, which would be carried out in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* with particular attention to the standards and guidelines for rehabilitation. Under the rehabilitation treatment, historic building materials and character-defining features would be protected and maintained to the extent possible, although extensively deteriorated, damaged, or missing features would be replaced with traditional or substitute materials. Possible alterations and additions may be appropriate to permit efficient contemporary uses of the structures and buildings. Non-historic properties would be allowed to molder or may be removed to restore natural resource values. These actions would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on historic properties.

Cumulative Impacts. Historic buildings, structures and cultural landscapes at the park

are susceptible to severe weathering and storm damage from harsh climatic conditions. Forest vegetation encroaching near historic structures and sites also presents a risk of fire damage from increasing fuel loads. Park staff also face logistical challenges and the additional expenses associated with transporting materials and equipment by boat from the mainland to island docks, and subsequently from docks to worksites on the islands to carry out preservation activities. Consequently, preservation treatment of historic buildings, structures and cultural landscapes may not always occur in a timely manner and/or may be deferred in some instances. The integrity of these historic properties can be adversely affected if historic fabric deteriorates or is lost. However, in conformance with the *Secretary's Standards* and as funding permits, the national lakeshore continues to carry out stabilization and preservation of historic structures (e.g., reroofing, repointing, painting, structural reinforcement and other repairs) to arrest deterioration and to retain as much of the historic integrity of these structures as possible. These measures, in addition to more extensive preservation treatments such as the rehabilitation and restoration of the Raspberry Island light tower and keeper's quarters, have had long-term beneficial impacts.

The impacts associated with implementation of the no-action alternative would have long-term negligible to minor adverse impacts and long-term beneficial impacts on the park's light stations, and other historic buildings, structures and cultural landscapes. Other past, present and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. However, the impacts of the other actions described above, in combination with the adverse and beneficial impacts of the no-action alternative, would result in long-term negligible to minor adverse cumulative impacts.

Conclusion. Implementation of actions proposed by the no-action alternative would have long-term negligible to minor adverse

impacts to the park's light stations and other historic structures, buildings and cultural landscapes listed in or eligible for listing in the National Register of Historic Places. Adverse impacts would result primarily from potential alterations, additions and/or replacement of historic fabric and other character-defining features determined necessary to preserve, restore or rehabilitate historic structures and landscape elements. However, implementation of appropriate preservation, restoration or rehabilitation treatments in accordance with the *Secretary's Standards* would also help ensure the long-term preservation of these historic properties — a beneficial impact.

There would also be long-term negligible to minor adverse cumulative impacts on these historic properties from implementation of the no-action alternative in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the national lakeshore or to opportunities for enjoyment of the national lakeshore, or (3) identified as a goal in the national lakeshore's *General Management Plan / Wilderness Management Plan* or other relevant NPS planning document, there would be no impairment of the national lakeshore's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 1 would result in no adverse effect on historic structures and cultural landscapes.

Archeological Resources

Within wilderness and nonwilderness areas on the islands, and at mainland units of the park, there would be no substantial changes in visitor uses or facilities, including docks, trails,

campsites, and day-use areas. Consequently, there would be little potential for impacts to archeological resources as a result of ground-disturbing construction activities beyond that associated with routine maintenance activities.

NPS archeologists would continue to monitor the condition of known archeological sites, and would undertake appropriate protection and stabilization measures as necessary to reduce or avoid site impacts possibly occurring from erosion, visitor use, or other factors. A relatively small percentage of the park's terrestrial and submerged areas have been intensively surveyed, and therefore NPS archeological staff would continue to expand and contribute to the existing data base by conducting survey inventories and documenting archeological resources in fulfillment of section 110 requirements of the National Historic Preservation Act. Continuation of archeological resource management actions under existing laws and policies would have long-term negligible to minor adverse impacts on archeological resources.

Cumulative Impacts. Archeological resources at the park (and throughout the region) are subject to a variety of disturbances associated with shoreline erosion and other natural erosion processes, high winds that can overturn trees and dislodge buried sites, ground-disturbing construction activities, inadvertent visitor use impacts, artifact looting, etc. These factors can contribute to adversely affect the integrity of archeological resources as the potential of impacted sites to yield important prehistoric or historic information is diminished and/or irretrievably lost. However, understanding of regional prehistory and history can also benefit as archeological information continues to be acquired through ongoing research and perhaps from data recovery investigations carried out in fulfillment of mitigation requirements.

The impacts associated with implementation of the no-action alternative would have long-term negligible to minor adverse impacts on

the park's archeological resources. Other past, present and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. Consequently, the beneficial and adverse impacts of the other actions described above, in combination with the impacts of the no-action alternative, would cumulatively result in long-term negligible to minor adverse impacts on archeological resources.

Conclusion. Implementation of actions proposed by the no-action alternative would have long-term negligible to minor adverse impacts on the park's prehistoric and historic archeological resources listed in or eligible for listing in the National Register of Historic Places. There would also be long-term negligible to minor adverse cumulative impacts on archeological resources from implementation of the no-action alternative in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 1 would result in no adverse effect on archeological resources.

Ethnographic Resources

NPS staff would continue to collaborate with the Ojibwe and other affiliated tribes to identify and evaluate potential ethnographic resources by conducting appropriate research and investigations (i.e., ethnographic

overviews and assessments, traditional use studies, ethnographic landscape studies, oral histories, etc.). Identified ethnographic resources meeting the criteria of national register-eligibility would be documented and managed as "traditional cultural properties." Efforts to identify, document and protect ethnographic resources would have long-term, beneficial impacts on these resources should they be found to exist in the park.

Within wilderness and nonwilderness areas on the islands, and at mainland units of the park, there would be no substantial changes in visitor uses or facilities, including docks, trails, campsites, and day-use areas. Consequently, there would be little potential for impacts to ethnographic resources as a result of ground-disturbing construction activities beyond that associated with routine maintenance activities. Continuing consultations with the Ojibwe and other affiliated tribes to identify ethnographic resources would minimize the possibility that unknown sites could inadvertently be disturbed. Long-term negligible to minor adverse impacts by visitor use or NPS activities would be anticipated.

In consultation with affiliated tribes, the Park Service would continue to permit customary harvest and consumptive use of park resources, including the rights to hunt, fish and gather plants and berries. These activities would be carried out in accordance with park purposes and NPS policies, with the provision that they do not to adversely affect park wildlife or the reproductive potential of plant species, or otherwise adversely affect park resources. Also in accordance with applicable laws and policies, the Park Service would permit tribal access to park areas for traditional religious, ceremonial, and other customary activities. In consultation with the tribes and consistent with tribal goals, the Park Service would protect sacred sites and other ethnographic resources should these be identified. Providing and protecting tribal access to traditional use areas in the park, and protection of customary hunting, fishing, and gathering activities would have long-term, beneficial impacts on ethnographic resources.

Cumulative Impacts. Ethnographic resources at the park (and throughout the region) are subject to a variety of disturbances associated with erosion and other natural processes, ground-disturbing construction or development activities, inadvertent visitor use impacts, blocked access to traditional use areas, artifact looting, etc. In part because of tribal concerns for retaining the confidentiality of ethnographic resources, land managers are occasionally challenged to provide adequate protection for these resources because of the limited information available regarding their potential existence, nature and location. These factors can contribute to adversely affect the integrity of ethnographic resources having particular significance to tribes and other cultural groups. However, ongoing research and information gathered from tribal consultations can provide long-term benefits by increasing understanding and appreciation for the protection of regional ethnographic resources.

The impacts associated with implementation of the no-action alternative would have long-term negligible to minor adverse impacts on the park's ethnographic resources. Other past, present and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. Consequently, the beneficial and adverse impacts of the other actions described above, in combination with the impacts of the no-action alternative, would result in long-term negligible to minor adverse cumulative impacts on ethnographic resources.

Conclusion. Implementation of the actions proposed by the no-action alternative would have long-term negligible to minor adverse impacts on ethnographic resources at the park. Long-term negligible to minor adverse cumulative impacts on ethnographic resources would also occur from implementation of the no-action alternative in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the national lakeshore or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 1 would result in no adverse effect on ethnographic resources.

VISITOR USE AND EXPERIENCE

Ability to Access the Park, Including Universal Access

The park has numerous access points both on the mainland and the islands. An important aspect of access in the park is the presence of boat launches, landings, and docks, as well as access to the islands for those without a boat. In this alternative existing launches and docks would be maintained and would continue to service the majority of visitors to the park's most desired visitor locations, resulting in a long-term, moderate, beneficial impact. In addition, the current island ferry service would continue providing an alternative means of access to the islands, resulting in a long-term, moderate, beneficial impact. During scoping for this plan as well as the previous wilderness study, many visitors noted the need for improved access to certain islands (e.g., docks are not deep enough, docks are crowded at times, more docks and boat landings are needed to access certain areas). Under this alternative, this situation would continue to affect a small number of visitors in a few locations—resulting in an on-going, long-term, minor, adverse impact.

Further, the park has several facilities, including all three visitor centers that are accessible to visitors with disabilities. It has been noted by the public during interactions with park staff that there is interest in seeing more facilities and programs at Apostle Islands National Lakeshore that would support the needs of visitors with disabilities. This alternative would maintain the limited accessible facility and program opportunities on both the mainland and islands, thus the existing long-term, minor, adverse impact to visitors would continue.

Lake and Island Related Recreation Opportunities and Experiences

In this alternative, visitors would continue to access high-quality lake and island recreational opportunities including boating, swimming, hiking, camping, fishing, sightseeing, hunting, visiting historic sites, and participating in interpretive programs and guided trips. It is likely that the most popular activities on the islands will continue to be sightseeing, lighthouse tours, day hikes, and camping. During scoping and recent visitor surveys, most respondents acknowledged their enjoyment of the park's recreational opportunities and suggested that the amount of opportunities should be maintained close to current levels. This alternative would continue existing opportunities, resulting in a long-term, major, beneficial impact.

During scoping for the plan, there were some mentions of additional recreation opportunities that were desired including more trail and camping facilities, particularly group camping. The lack of some of these desired improvements in this alternative would continue to create a long-term, minor, adverse impact for visitors, especially those seeking these specific facilities and opportunities.

The park continues to provide outstanding opportunities for solitude, quiet, "wildness," connection with nature, and first hand discovery of the islands' history. These characteristics of the park's visitor

opportunities are highly valued by the public. The wilderness areas of the park are especially important for protecting the opportunities for solitude and primitive recreation. The continuation of these types of opportunities by the protection of a high degree of naturalness, access opportunities via rustic trail systems, and primitive camping opportunities would result in a long-term, major, beneficial impact. Further, the efforts of the Park Service to protect opportunities for self discovery of the islands' cultural history by promoting "rewilding" in designated wilderness areas creates a unique and highly valued experience for many visitors, leading to a long-term, moderate, beneficial impact.

Some of the current impacts to opportunities for solitude and primitive recreation are related to crowding and congestion at high use docks and boat launches and landings. In addition, increasing use levels and noise associated with motorized use on Lake Superior may also continue to influence the natural soundscape and viewsapes of the park's wilderness area. Also, the group campsite activity on Oak Island may cause noise impacts and increase the perception of crowding in the designated wilderness of the island. Finally, the designated camping zones promote visitor freedom and outstanding opportunities for primitive recreation, but can also lead to resource impacts, such as creation of informal campsites resulting in vegetation loss, soil erosion, and incidences of improper human waste disposal. These impacts may detract from the wilderness area's naturalness, influencing the visitor experience. All of these impacts will continue in this alternative and may increase over time if use levels and types change. This alternative would not take measures to mitigate these current impacts, allowing the long-term, minor, adverse impacts on opportunities for solitude, primitive recreation and naturalness to continue in certain areas.

Mainland Recreational Opportunities and Experiences

In this alternative, visitors would continue to access high-quality mainland recreational opportunities including hiking, swimming, camping, boat launching, fishing, sightseeing, visiting historic sites, and participating in interpretive programs. As noted above, during scoping and recent visitor surveys, most respondents acknowledged their enjoyment of the park's recreational opportunities and suggested that the amount of opportunities should be maintained close to current levels. This alternative would continue existing opportunities on the mainland, resulting in a long-term, major, beneficial impact.

During scoping for the plan, there was some mention of additional recreation opportunities that were desired specifically for the mainland, including extension of the Lakeshore Trail and more camping opportunities. The lack of some of these desired improvements in this alternative would continue to be a long-term, minor, adverse impact for visitors, especially those seeking these specific facilities and opportunities.

Opportunities to Understand the Significant Stories of the Apostle Islands

There are four visitor centers associated with the park. NPS staff members provide education and orientation programs and services at these visitor centers. All of these opportunities would continue in this alternative.

There are several concerns related to these facilities that will continue in this alternative. The visitor center associated with headquarters in the City of Bayfield is located in a historic building that is very important to the gateway community and has an excellent auditorium. However, this facility has limited, inflexible space for exhibits and direct interaction between visitors and NPS staff/volunteers. Although the historic building is located in the center of the City of Bayfield, it is outside of the immediate

transportation routes through town, so it has limited visibility to out of town visitors. Also, the current location is a distance from the concession cruise boat, so few cruise visitors access the visitor center. Finally, there are no views of the islands or Lake Superior from the facility.

The Little Sand Bay Visitor Center is in poor condition and has limited exhibit space. The Stockton Island Visitor Center is commonly unstaffed and also has limited exhibit space. However, this facility meets the current needs of the smaller number of public that it serves. The Northern Great Lakes Visitor Center is a new and modern facility with cutting edge exhibit design and a coordinated focus on regional public lands. However, this facility is not located in a place that captures a high number of Apostle Island visitors. Collectively, these visitor center issues create some challenges for visitors being able to fully understand the significant stories of the Apostle Islands, resulting in a long-term, moderate, adverse impact.

Additional education and orientation is provided to visitors via nonpersonal services such as trailhead bulletin boards and wayside exhibits, trail signs, and park brochures. These opportunities are considered satisfactory and will continue in this alternative, resulting in a long-term, moderate, beneficial impact.

Many of the park's significant cultural sites and resources have visitor access and interpretation that is highly valued and sought after by the public, such as the Raspberry Island light station. However, there are many cultural sites in the park that have limited or no visitor access or associated interpretive programs and materials. The public has expressed an interest in having more access and educational opportunities related to these resources. Further, the NPS staff believe that major aspects of the park's significant stories are not effectively communicated due to the lack of access and interpretation of these sites—this results in a long-term, moderate, adverse impact.

Visitor Safety

Safety information about navigating Lake Superior and interacting with wildlife will continue to be available at the visitor centers, on-line, and through roving contacts with NPS staff.

Current concerns regarding visitor safety include the need for a higher level of visitor contact at Meyers Beach, more strategic stations for NPS staff to improve response times, and a more visible location for the main visitor center to interact with more visitors that come to the park. These concerns are compounded by the ability of the park to maintain adequate emergency response capabilities, which are seriously compromised due to the use of inadequate and outdated facilities. None of these suggested improvements will be made in this alternative, resulting in a long-term, moderate, adverse impact on visitor safety.

Further, the continued interaction of visitors and bears on Stockton Island due to the interface of the campsites and bear habitat creates a long-term, minor, adverse impact on visitor safety.

Cumulative Effects. There are no actions or developments foreseen within or adjacent to the park that would likely affect visitor use and experience. There is the possibility of a slight increase in visitation or a change in visitor interests and demand due to potential changes in regional populations or national recreation trends. The likelihood of these changes is unknown at this time. If this were to occur, it may cause a slight increase in existing visitor use concerns such as crowding and conflicts at high use docks and attraction sites. Also, any significant effects from climate change could have a minor to major effect on visitor use and experiences. Of particular concern is the likely warmer water and longer seasons, punctuated by more severe and unpredictable storms, suggesting a long term adverse impact on visitor safety as more visitors are likely to be vulnerable to Lake Superior without adequate preparation. Other

changes that could result in impacts include reduced access to infrastructure and alterations to wildlife watching and fishing opportunities as a result of habitat changes.

Conclusion. Alternative 1 would result in long-term, moderate to major, beneficial impacts from continued opportunities to access high-quality lake and island recreational opportunities, and the preservation of existing launches and docks that service the majority of desired visitor locations. Further, the park would continue to provide outstanding opportunities for solitude, quiet, “wildness,” connection with nature, and first hand discovery of the islands’ history. These are all highly valued characteristics of the visitor experience by the public. However, minor to moderate adverse impacts on the visitor experience from visitor crowding and use conflicts at specific locations, the location and condition of some of the park’s visitor centers, limited interpretation and access to significant cultural sites and safety concerns at Meyers Beach and Stockton Island would continue. Finally, any effects resulting from changes in population, recreational trends or climate change may result in additional minor to major adverse effects, but the ability to predict the type or intensity of these impacts is limited at this time.

PARK OPERATIONS

Analysis. Under the no-action alternative (and all of the other alternatives as well), NPS operations would continue to be characterized by (1) a substantial number of facilities or assets (e.g., visitor contact stations, campsites, trails, and historic structures and landscapes) that must be maintained; (2) visitor-related operational demands (e.g., interpretive services, patrols, and campground maintenance) that are much greater in the busy summer visitor season than at other times of year; and (3) island operations that command a disproportionate share of the park’s annual operating budget due to the

logistics of transporting equipment, materials, and staff to and from the islands.

With the park spread out over nearly 450 square miles, the geography of the park's islands poses operational challenges. In alternative 1, park operations/administration and maintenance facilities and staff would continue to be based out of Bayfield, Roys Point, and Little Sand Bay. Assuming the Roys Point facilities do not move in the near future, staff, equipment, and facilities would continue to be fragmented. The lack of a central maintenance facility means that critical tools, equipment, and supplies would continue to be stored in several locations. Staff would continue to travel back and forth between the three facilities. Thus, the physical separation of the maintenance/operations facilities, staff, and the geography of the park would continue to result in some inefficiency for park operations and maintenance management, including staff and equipment mobilization and travel. Emergency response times would continue to be less effective as they could be since park staff would be scattered on the mainland. Administrative/operational facilities at Little Sand Bay would continue to be substandard, affecting staff productivity. The absence of a staff facility at Meyers Beach would continue to detract from the park staff's ability to effectively and efficiently protect park resources and meet visitor needs. All of the above consequences would have a minor to moderate, adverse, long-term effect on park operations.

Current funding levels have caused some positions to remain vacant, which has had an effect on the park's organizational capacity. All of the park's divisions have identified staffing shortages through business planning models, and the impact of staffing deficiencies would likely continue, resulting in a moderate, adverse, long-term effect on park operations.

Assuming current funding trends continue and staffing levels remain similar to present, the park would continue to be unable to fully achieve desired conditions in program areas such as resource protection, visitor services,

and cyclic maintenance; and the deferred maintenance backlog would continue to grow over time. Natural and cultural resource programs would also be adversely affected. Staff would need to devote more time to management of the wilderness area, such as performing wilderness minimum requirement analyses to ensure the existing wilderness character is maintained. The no-action alternative would have continuing beneficial and long-term, minor to moderate, adverse impacts on NPS operations, but there would be no new impacts.

Cumulative Impacts. No major new park projects and actions, independent of this plan, are expected over the life of this plan. Thus, no foreseeable actions would combine with alternative 1 that would result in cumulative park operations impacts.

Conclusion. Under alternative 1, park operations would continue to experience minor to moderate, long-term, adverse impacts due to inadequate facilities, the fragmentation of park staff and facilities, staffing shortages, and lack of funding. No cumulative impacts on park operations would be expected as a result of the alternative.

SOCIOECONOMIC ENVIRONMENT

Analysis. Apostle Islands National Lakeshore affects many elements of the regional economy, as noted in the "Affected Environment" chapter. With visitor use likely to be steady in the future and continuing NPS expenditures to operate and maintain the park, the park would continue to have a long-term, beneficial impact on the socioeconomic environment. Visitor spending would continue to affect local tourism businesses (e.g., motels, local stores, marinas, guides). Park spending would also continue to benefit local merchants, equipment suppliers, and contractors. Local governments also would continue to collect revenues from visitor spending and from businesses that obtain income from tourism and park operations.

The park would continue to be an important attraction for many residents and for people considering relocation to the region, although the park would not be expected to cause major changes in the regional population. There would be little or no change in park-related demands on community services and facilities.

Although the park would continue to be important to socioeconomic environment, under the no-action alternative park facilities, access, and visitor opportunities would generally be maintained at existing levels, and park expenditures would not substantially change. Thus, it is expected that this alternative would result in no changes in the socioeconomic environment.

Cumulative Impacts. No ongoing or new park projects, independent of this plan, or other major changes on lands adjacent to the park (e.g., substantial changes in management and land use of lands adjacent to the mainland unit) are expected over the life of this plan. In the future developments such as second homes may be built on some lands adjacent to the mainland unit. With increased revenues for construction businesses, and increased tax payments, this likely would have short- and long-term, minor, beneficial impacts on the regional economy, depending on the nature and scope of the developments. But because alternative 1 would have no socioeconomic effects, there would be no additive, cumulative impacts on the regional economy.

Conclusion. Although Apostle Islands National Lakeshore would continue to be a key component of the regional socioeconomic environment, the no-action alternative would have no effect on the socioeconomic environment. No cumulative effects would occur as a result of the alternative.

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are defined as impacts that cannot be fully mitigated or avoided. Under the no-action alternative,

some soils and vegetation would continue to be lost or altered in developed and high use areas due to soil erosion from visitor use. This would include bank erosion, and trampling of vegetation on sandscapes. Docks (e.g., Michigan Island) would continue to alter coastal processes. Visitors also may inadvertently contribute to the introduction and spread of nonnative species and to water pollution in localized areas. Long-term, adverse impacts would continue to the natural soundscape due to visitor use and NPS maintenance activities, primarily in high-use areas and during high-use periods (e.g., summer weekends). Crowding and congestion at high use areas (e.g., docks) would occur during the summer, adversely affecting some visitors' experiences. Bear-human conflicts would likely continue at the Stockton Island – Presque Isle campground, which would adversely affect some bears and possibly people. Education, interpretation, and outreach efforts would help minimize, but not eliminate, the likelihood of these impacts.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments of resources are actions that result in loss of resources that cannot be reversed, except perhaps in the extreme long term. Irretrievable commitments of resources are actions that result in the loss of resources but only for a limited period of time.

No new actions would be taken that would result in either the consumption of nonrenewable natural or cultural resources, or the use of renewable resources that would preclude other uses for a period. Because it takes so long for soils to form, the loss of soils due to visitor use in localized areas, and erosion of soil in places within Apostle Islands National Lakeshore would be an irreversible commitment of resources.

THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

This question explores long-term effects of an alternative, and whether or not the productivity of park resources is being traded for the immediate use of land. The National Park Service would continue to manage the park to maintain ecological processes and native biological communities and to provide appropriate recreational opportunities consistent with preservation of cultural and natural resources. The vast majority of Apostle Islands National Lakeshore would

continue to be protected in its current, relatively natural state and would maintain its long-term productivity. The primary short-term uses of the park would continue to be recreational use. Continuing adverse impacts on the area's soils, water quality, vegetation, and wildlife due to visitor use, could reduce the productivity of natural resources in localized areas over time, although overall there would be no measurable effect on the park's long-term productivity. On the other hand, continuing efforts to restore disturbed areas would increase long-term productivity of the environment in localized areas.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 2

NATURAL RESOURCES

Soils

Analysis. Several new park facilities would be built under alternative 2 that would involve ground disturbance and consequently impacts to soil. The construction and use of a new day use area on Basswood or Sand Island and at Little Sand Bay, new trails on selected islands, new group and individual campsites on Sand, Oak, and Basswood; the relocation of most of the Stockton Island – Presque Isle campground and the Oak Island group campsite to new sites; the clearing of vegetation at light stations and on the Hansen farmsite on Sand Island; and the construction and use of a new ranger station and access ramp at Meyers Beach would all result in the loss or alteration of soil in localized areas. Site preparation and landscaping work would disturb soils in the project areas and construction equipment would disturb and compact soils. The development of trailer pads for NPS housing and visitor center at Little Sand Bay, and a new visitor center/operations facility in Bayfield, would likely occur on areas that have already been altered by past actions and developments, and thus would have a negligible effect on area soils. A total of no more than about 25 acres of soil would likely be altered or lost by these new developments. The adverse impact on soils in the project areas would likely be moderate and long term, but from a parkwide perspective the adverse impacts due to new developments would be minor to moderate, and long term.

With visitation being encouraged on selected islands, such as Basswood and Sand, some popular areas would receive heavier use than under alternative 1. Thus, the adverse impacts on soils due to visitor use would be expected to be moderate in these localized areas and

long term under alternative 2. Most of the soil impacts would likely occur along or near the shorelines of the islands that experience higher use levels.

As in alternative 1, some soils may be compacted and eroded due to some existing campsites expanding, informal “zone” campsites being created, and “user-created trails” being formed in areas with facilities that receive relatively high levels of use. But with continued monitoring and instituting more formal user capacity indicators and standards in alternative 2 should help ensure that an unacceptable expansion in the size of campsites does not occur. Thus, compared to alternative 1, even with increased use levels on some islands, alternative 2 would be expected to result in fewer soil impacts, resulting in a long-term, beneficial impact.

Cumulative Impacts. Soils in much of Apostle Islands National Lakeshore probably have been altered by past activities (e.g., logging, agricultural practices). Some soils on lands adjacent to the mainland unit of the park may be lost or modified in the future due to new development. Also in the future, if the Quarry Bay campsites on Stockton Island were relocated, this would affect soils in a localized area. Assuming the campsites were relocated to a relatively undisturbed site, soils would be lost or modified. When these impacts are added to the minor to moderate adverse impacts under alternative 2, there would be a long-term, minor to moderate, adverse cumulative impact on area soils—although the Quarry Bay action would add a very small increment to the overall cumulative impact.

Conclusion. Most of the park’s soils would not be affected by the actions in alternative 2. However, some soils would be eroded and

lost, and soil properties would be altered due to construction of new facilities on the islands and mainland, and increased visitor use in localized areas on some islands such as Basswood and Sand. Overall, these adverse impacts would likely be minor to moderate and long term in extent. On the other hand, establishing and monitoring user capacity indicators and standards should help reduce the expansion of campsites, preventing soil erosion. This would have a long-term, beneficial impact. No unacceptable soil impacts or impairment to the park's resources and values would result from this alternative. When the impacts of alternative 2 are added to past and foreseeable future impacts (i.e., relocation of the campsites in Quarry Bay) there would be a long-term, minor to moderate, adverse cumulative impact on area soils.

Geological and Coastal Processes

Analysis. With proper design and planning, the relocation of most of the Stockton Island – Presque Isle campground to Presque Isle would reduce soil impacts to the sandscape in this area compared to alternative 1, resulting in a long-term, beneficial impact.

With continuing visitor use of the islands' sandscapes and beaches, it is expected that the vegetative cover on some popular areas, such as the Raspberry and Ironwood sandspits, would continue to be trampled, which in turn would increase the potential for wind and water erosion to affect the characteristics of some sandscapes (e.g., size, shape). Erosion due to people climbing up and down lake banks also would continue at island campsites near the lakeshore. Thus, visitor use in alternative 2 from a parkwide perspective would likely have the same effect on the park's sandscapes over time as alternative 1: visitor use impacts would vary, depending on the level of use and environmental conditions, but long-term adverse impacts to coastal processes could range from minor to moderate in localized areas.

As in alternative 1, existing docks would continue to affect coastal processes, altering the transport of sediments along the shoreline, resulting in minor to moderate, long-term, adverse impacts in localized areas. But several docks on the islands, such as the Michigan Island dock, would be rehabilitated and improved in alternative 2. As noted in the mitigative measures in chapter 3, these improvements would not occur until studies of longshore sand transport have been completed. Although it is not certain what would come out of these studies, for some docks the improvements could include measures to reduce the impact of the docks on the movement of sand along the coastline. With more sand available to replenish downstream areas, it is likely that Lake Superior currents and waves would not erode beaches as much under alternative 2 as under alternative 1. Depending on the design, location, and extent of the docks, and assuming the frequency and intensity of major storms does not substantially change, alternative 2 could have a long-term, beneficial impact on a few of the park's sandscapes compared to alternative 1.

Cumulative Impacts. As noted above and in the "Affected Environment" chapter, coastal processes in the past have been altered in specific areas, such as the installation of the dock at Michigan Island. Climate change is expected to affect lake levels and thus would affect coastal processes, including sediment transport and the park's sandscapes and beaches. Because the changes due to climate change in the park are unpredictable, both in their timing (whether they occur within the timeframe of this plan or beyond) and in magnitude or intensity of the impact—the effects of climate change on coastal processes could range from minor to major in intensity. When the effects of the actions in alternative 2 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact. But alternative 2 would add a very small increment when added to the potential effects of climate change.

Conclusion. Alternative 2 would have both adverse and beneficial effects on coastal processes. Visitors and existing docks would likely continue to affect the park's sandscapes and shorelines, resulting overall in a minor to moderate, long-term, adverse impact in localized areas of the islands. On the other hand, compared to alternative 1 the relocation of most of the Stockton Island – Presque Isle campground and the rehabilitation of several docks would help reduce visitor and dock impacts on shorelines and sandscapes, resulting in a long-term, beneficial impact. None of these impacts would be considered unacceptable, and none would result in an impairment of park resources and values. When the effects of climate change are added to the effects of alternative 1, there would be the potential for a long-term, minor to major, adverse cumulative impact on coastal processes—although the actions in alternative 2 would add a very small increment to this overall impact.

Surface Water Quality

Analysis. As in alternative 1, in alternative 2 visitors would continue to affect water quality in localized areas through swimming and bathing, and through the disposal of graywater and trash. These activities can contribute to the degradation of water quality by increasing nutrient and bacteria levels, and other chemicals (e.g., petroleum-based products, sunscreen, soaps). Some sedimentation also would occur at unsurfaced landings in localized areas where visitors put in and take out their boats and in areas where bank erosion is occurring due to visitors walking down steep slopes. With user levels increasing on some islands in this alternative, the potential for impacts to water quality would increase, although the large volume of Lake Superior would continue to dilute these impacts. On the other hand, new facilities on Basswood would likely include outhouses, which would help reduce the potential for water pollution in this area. Overall, visitor use in alternative 2 would likely have the same impact as in alternative 1: a negligible to minor, long-term, adverse impact to water

quality in localized areas due to relatively low use levels and the dilution effect of Lake Superior.

Although new transportation options would be encouraged in alternative 2, overall motorized boat use levels would not be expected to substantially change in the park. Thus, pollution from motorized boats, including MTBE (methyl tertiary butyl ether), PAHs (polyaromatic hydrocarbons), BTEX (benzene, toluene, ethylbenzene, and xylene) and heavy metals such as copper, would be expected to result in about the same overall minor, long-term, adverse water quality impacts as alternative 1. Also, as in alternative 1, there could be minor to moderate, long-term impacts to water quality in those areas—such as Presque Isle Bay and Little Sand Bay—that receive high use levels, particularly on weekends and holidays.

Unlike in alternative 1, in alternative 2 several docks would be rehabilitated. Depending on the nature and extent of the work, there could be water quality impacts due to increased turbidity in adjacent waters. However, the application of mitigative measures should minimize potential impacts due to accidental spills. Any such impacts from the dock work would be negligible to minor and short term in duration.

Cumulative Impacts. Several sources of water pollution external to Apostle Islands National Lakeshore have affected, and are likely to continue affecting, the water quality of the park. When added to the water quality impacts of alternative 2 being considered (negligible to minor, long-term, adverse impacts), there could be a minor to major, long-term, adverse cumulative impact to the park's water quality, depending on the type and quantity of pollutants that enter park waters. However, the increment added by alternative 2 would be relatively small compared to the impact from pollutants being added from actions outside the park boundary.

Conclusion. Alternative 2 would have the same negligible to minor, long-term, adverse impacts in water quality due to visitor use as alternative 1. Negligible to minor, short-term, adverse impacts to water quality also would occur due to rehabilitation of docks in this alternative. None of these impacts would be considered unacceptable, and the level of impact would not constitute an impairment of the park's resources and values. When the effects of alternative 2 are added to the effects of water pollution from sources outside of the park, there would be the potential for a minor to major, adverse cumulative effect on the park's water quality. However, the actions in alternative 2 would add only a small increment to the overall cumulative impact.

Wetlands

Analysis. No developments would occur under alternative 2 that would have the potential to affect wetlands in the park. As in alternative 1, some impacts would occur due to people walking through wetlands, trampling vegetation. But only a few people would be expected to walk into the wetlands over the course of a year, resulting in negligible, short- and long-term, adverse impacts.

Cumulative Impacts. Climate change will likely affect the park's wetlands, including their species composition and water levels. For example, if the frequency or intensity of storms change, park wetlands could be affected. Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park's wetlands could range from minor to major in intensity. When the effects of the actions in alternative 2 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact on wetlands. But alternative 2 would add a very small increment to the potential effects of climate change on wetlands.

Conclusion. Alternative 2 would have the same effect as alternative 1: a negligible, short- and long-term, adverse impact on the park's wetlands primarily due to people occasionally walking through the wetlands. The effects of this alternative would not result in unacceptable impacts or impairment of the park's resources and values. When the effects of this alternative are added to the potential effects of climate change, there could be a minor to major, long-term, adverse cumulative effect on the park's wetlands, although the actions in alternative 2 would add a very small increment to the overall cumulative impact.

Floodplains

Analysis. Under alternative 2, no new developments or other actions would occur in the Sand River floodplain on the mainland. Visitors would continue to walk through the floodplain, trampling vegetation. But with no trails in the area, only a few people would be expected to walk into the floodplains over the course of a year, resulting in negligible, short- and long-term, adverse impacts.

Cumulative Impacts. No past, present, or foreseeable actions within or outside the park are expected to affect the Sand River floodplain. Thus, there would be no additive cumulative effects on the floodplain.

Conclusion. Alternative 2 would have the same effect as alternative 1: a negligible, short- and long-term, adverse impact due to people walking in the Sand River floodplain. These impacts would not be considered unacceptable and the level of impact would not constitute an impairment of the park's resources and values. No cumulative impacts would occur as a result of this alternative.

Vegetation

Analysis. The development of trailer pads for NPS housing, a visitor center and ramp at Little Sand Bay, and a new visitor center/operations facility in Bayfield in alternative 2 would likely occur on areas that have already been altered by past actions and

developments, and thus would have a negligible to minor adverse effect on native vegetation. Removal of vegetation that is encroaching on the light station clearings also would result in the loss of some native vegetation, which would have a negligible to minor, long-term, adverse impact depending on how much vegetation was removed.

Several new park facilities would be built in alternative 2 that would involve clearing of native vegetation. The construction and use of new day use areas on the islands and at Little Sand Bay, new trails on selected islands, new group and individual campsites on Sand, Oak, and Basswood, relocation of most of the Stockton Island – Presque Isle campground and the Oak Island group campsite to new sites, and development of a new ranger station at Meyers Beach would all result in the loss or alteration of vegetation in localized areas. The cultural landscape restoration work at some light stations could result in the removal of native vegetation, although these areas were substantially altered in the past.

Efforts to partially restore the Hansen farm cultural landscape would entail, at a minimum, the removal of some native vegetation and weeds from old fields. Some native vegetation would be removed; however, because this area has been disturbed and altered in the past, this action would have a minor, long-term, adverse impact on native vegetation populations in this localized area.

A total of no more than about 25 acres of vegetation would likely be altered or lost by these new developments in alternative 2. The adverse impact on native plants in the project areas would likely be moderate and long term, but from a parkwide perspective, the adverse impacts due to new developments would be minor to moderate, and long term.

Under alternative 2, visitor use of Apostle Islands National Lakeshore, including hiking and camping, would continue to affect the park's vegetation. Although use levels would remain at current levels or slightly increase parkwide, on some islands a greater increase

in use would be expected. Thus, as in alternative 1, some vegetation would likely be lost due to the formation of user-created trails in popular areas such as campsites and picnic areas. Vegetation along the Lake Superior shoreline would continue to be trampled and damaged in places where visitors walk up and down the shoreline. Some plants would also probably continue to be lost through visitors walking on sensitive vegetation on sandscapes. Some existing designated campsites probably would expand in area over time, and user-created campsites would continue to be established or expand on islands, resulting in changes to and loss of vegetation in localized areas. If an area becomes cleared of vegetation due to the creation of a campsite(s), and if there were trees behind the cleared area and the beach, the trees would be more likely to be subject to blowdown. On the other hand, continued monitoring and the establishment of formal user capacity indicators and standards would assist managers in taking action before campsite conditions become unacceptable; this would have a minor, long-term, beneficial effect. Thus, visitor use under alternative 2, even with higher use levels in some areas, would be expected to have a long-term, minor, adverse impact on the park's native vegetation in localized areas.

As noted in the "Affected Environment" chapter, there has been a serious problem in the park with the introduction of nonnative species at construction sites. It is likely that some nonnative species would be introduced with new developments in this alternative. In addition, under alternative 2 some nonnative plants could be introduced or spread by park visitors at picnic areas and campsites, in spite of education efforts. Although it is difficult to determine the impact on native species due to the uncertainties about the type of species that might be introduced in the future and the locations and frequencies of introductions, it is likely that new introductions would occur. Even with monitoring and weed control efforts, the adverse effect of these impacts would be unknown, but could range from minor to major and be long term in duration.

Alternative 2 would have several beneficial impacts for native vegetation. Restoring vegetation on the Oak Island group campsite and most of the Stockton Island – Presque Isle campground, also would have beneficial impacts. Providing a ranger station at Meyers Beach and housing on Long Island would provide an NPS presence in these areas, which would aid in monitoring and taking action to address vegetation impacts due to visitors. Taken together, these actions would have a long-term, beneficial impact on the park’s vegetation in localized areas.

Cumulative Impacts. Several potential actions, independent of this plan, could affect the park’s vegetation. As described in the “Affected Environment” chapter, much of the park’s vegetation has been substantially altered by past human activities, including logging and fires, farming, the building of cabins, quarrying, and the development of roads and fish camps. The impacts of these past actions far outweigh the impacts of the actions being proposed in the alternatives in this plan.

In the future developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the loss and modification of vegetation in these areas. This would have a long-term, minor, adverse impact on natural vegetation in the vicinity of the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect vegetation in the area, which would add a minor, long-term, adverse incremental effect to the effects of alternative 2.

Nonnative species have been spreading in different locations in the park, such as Meyers Beach, due to past construction activities, visitor activities, and natural sources like wind and birds. Independent of the actions in the alternative, the spread of nonnative species is likely to continue in the future. From a parkwide perspective, this has resulted in a minor to major, long-term, adverse

cumulative impact on the park’s vegetation, depending on the species.

As noted in the “Affected Environment” chapter, deer are spreading from the mainland to the islands in increasing numbers. Increasing numbers of deer would browse the islands’ native vegetation, reducing or eliminating such species as Canada yew, which could have a moderate to major, long-term, adverse impact on some native vegetation on the islands.

Climate change likely has affected and will continue to affect the park’s vegetation, including species composition and population numbers. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the potential for wildfires and the spread of and seasons for insects, which in turn would have a minor to major, long-term, adverse impact on the park’s native vegetation.

When the effects of all of these past and future actions are added to the adverse and beneficial effects of alternative 2, there would be a major, long-term, adverse, cumulative effect on the park’s vegetation. However, the effects of alternative 2 would add a very small increment to the overall cumulative impact.

Conclusion. Alternative 2 would result in both beneficial and adverse impacts to the park’s vegetation in localized areas. Restoration actions, the application of user capacity indicators and standards, and increased NPS presence on Long Island and Meyers Beach would result in an overall long-term, beneficial impact. Minor to moderate, long-term, adverse impacts would occur due to the development of new facilities and increased visitor use on some islands. The potential for the introduction and spread of nonnative invasive species in the park could increase, relative to alternative 1, resulting in an unknown impact on native vegetation. However, overall most of the park’s vegetation would not be affected by the actions in alternative 2 (with the possible

exception of the impact of nonnative species). None of the impacts would likely affect the integrity, distribution, or presence of native plant communities in Apostle Islands National Lakeshore. None of the vegetation impacts in alternative 2 would be considered unacceptable or sufficient to result in an impairment of Apostle Islands National Lakeshore's resources and values. There would be the potential for a major, long-term, adverse cumulative effect on park vegetation, when past, present and foreseeable future actions within and outside the park are added to the effects of alternative 2. However, alternative 2 would add a very small increment to the overall cumulative impact.

Wildlife

Analysis. Some of the new developments in alternative 2 would occur in areas that have relatively natural vegetation, where people have not been present in large numbers. These areas and actions include the new day use areas on the islands and at Little Sand Bay; new trails on selected islands; new group and individual campsites on Sand, Oak, and Basswood islands; the new Meyers Beach ranger station; the relocation of most of the Stockton Island – Presque Isle campground to Presque Isle; the clearing of vegetation at light stations and on the Hansen farmsite on Sand Island; and the possible relocation of the Oak Island group campsite to a new site. These new developments and actions would result in a loss or alteration of approximately 25 acres of wildlife habitat, with some wildlife, such as forest birds and mammals (e.g., voles, squirrels, hares) being displaced from the areas. Noise generated from the construction activities and from visitor use of the new facilities could potentially result in a larger area being subject to wildlife disturbance and displacement. Although construction activities would result in short-term impacts on wildlife, use of the facilities would result in long-term effects. As a result, there would likely be minor, long-term, adverse impacts on wildlife populations in these localized areas.

Other new developments, including the new trailer pads and visitor center at Little Sand Bay, and the new visitor center/ operations facility in Bayfield, would occur in areas that have already been altered by past actions and developments and by the presence of people. Wildlife remaining in these areas have adapted to the presence of people, but wildlife are still being affected. Courtship, territory establishment, intra-species communication, predation and predator avoidance, and effective use of habitat could already have been affected by noise. That said, it is expected that any adverse impacts to wildlife due to these projects during the construction period would be negligible and short term in duration.

Although increased use levels would occur on several islands under alternative 2, the impacts would be about the same as described under alternative 1. Wildlife populations, behaviors, and habitats already have been altered by people in popular areas of the park; these effects would continue under this alternative. In alternative 2, human use of the park would continue to be primarily concentrated in areas such as the light stations, the islands' shorelines, and at campsites. Animals sensitive to human activities already avoid these areas when people are present. Wildlife that occupy these areas, such as red squirrels, hares, and mice, are mostly adapted to the presence of people and would not be noticeably affected by increased visitation. As in alternative 1, some animals would continue to occasionally be injured or killed by motor vehicles driving on roads in the mainland unit. Some animals, such as mice, blue jays, bears, sea gulls, and red squirrels, also probably would continue to be attracted by visitors feeding them or to areas where food and garbage are left out. The continuation of hunting and trapping would not be expected to adversely affect the park's populations, assuming that harvests stay at about existing levels and there is careful monitoring and enforcement of the state's regulations by the state of Wisconsin and the park staff. Taken altogether, visitor use in this alternative would be expected to have a

minor, long-term, adverse impact on the park's wildlife populations.

Alternative 2 would have several beneficial impacts on wildlife. With the relocation of most of the Stockton Island – Presque Isle campground to Presque Isle, out of key bear habitat, the potential for bear-human conflicts would decline compared to alternative 1. Thus, in alternative 2, it is likely in the future that fewer problem bears would need to be conditioned to avoid humans, resulting in a long-term, beneficial impact. In addition, under alternative 2 the restoration of native vegetation on the Oak Island group campsite site would increase wildlife habitat, resulting in a long-term, beneficial impact. Clustering some campsites in the wilderness area would decrease habitat fragmentation and concentrate people in fewer areas, which in turn would reduce direct human-wildlife interactions, resulting in a long-term, beneficial impact. Finally, providing a ranger station at Meyers Beach and possible staff housing on Long Island would provide a long-term NPS presence in these areas, which would aid in monitoring and taking action to address wildlife impacts due to visitors.

Cumulative Impacts. Like vegetation, several potential actions, independent of this plan, could affect the park's wildlife. As described in the "Affected Environment" chapter, the loss of and/or changes in vegetation have affected the habitat for wildlife in the park (e.g., the spread of deer). Hunting also has affected wildlife in the past and present.

In the future, developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the displacement of some wildlife and the loss and modification of wildlife habitat in these areas. In addition, noise generated by human activities in the vicinity of the islands, such as that generated by the use of motorized watercraft, could also disturb or displace some wildlife, particularly if these uses were to increase. These actions would likely have a long-term, minor, adverse impact on wildlife populations in or near the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect wildlife in the area, displacing some animals, which would add a minor, long-term, adverse incremental effect to the effects of alternative 2.

Climate change will also likely affect wildlife composition of the park. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the spread of and seasons for insects, which could benefit some wildlife species and adversely affect other species. (See the "Affected Environment" chapter for more information.) Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park's wildlife could range from minor to major in intensity. When the effects of the actions in alternative 2 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact on the park's wildlife populations. But alternative 2 would add a very small increment to the potential effects of climate change on wildlife.

Conclusion. Alternative 2 would result in both adverse and beneficial impacts to wildlife in localized areas. Most wildlife in the park would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species. New developments on the islands would result in the loss of some wildlife habitat, resulting in a minor, long-term, adverse impact. Minor, long-term adverse impacts also would occur due to increased visitation on several islands. On the other hand, alternative 2 would result in long-term, beneficial impacts due to habitat restoration efforts, increased NPS presence at Meyers Beach and Long Island (if feasible), and the relocation of the Stockton Island –

Presque Isle campground out of key bear habitat. There would be the potential for a minor to major, long-term, adverse cumulative impact on the park's wildlife when the effects of alternative 2 are added to the potential effects of climate change. But the increment added by alternative 2 to the overall cumulative impact would be very small. None of the wildlife impacts resulting from alternative 2 would be considered unacceptable or constitute an impairment of the park's resources and values.

Federal and State Threatened and Endangered Species

Analysis. No new actions or developments on Long Island or the Michigan Island sandspit under alternative 2 would affect the federal and state endangered piping plovers in the park. As in alternative 1, visitors and their dogs could disturb plovers. However, in alternative 2, NPS housing at the Long Island light station (if it is found to be feasible) would enable NPS staff to more effectively monitor the plover nests and reduce the potential for visitor disturbance. In addition, with continued efforts to protect nesting birds, including visitor education efforts and temporary closures around nesting areas, it is less likely that visitors would deliberately or accidentally disturb the plovers. If visitor use impacts were identified in the future, the park staff would consult with the U.S. Fish and Wildlife Service to identify and implement additional appropriate mitigative measures. Consequently, under alternative 2 visitors might affect, but would not likely adversely affect, piping plovers in the park.

Neither the changes in visitor use nor the new facilities in alternative 2 would be expected to affect use of the park by wolves. Although a few facilities would be built in the mainland unit and on a couple of islands, most are in areas already used by people and should not affect use of the park by wolves or their prey populations. As noted in the "Affected Environment," the park is a very small part of the range of the area used by wolves, and wolves that use the park are transient. The

absence of deer on most of the islands and the high number of deer on the mainland would tend to keep wolves from spending much time in the park. The winter is the most likely time wolves would be in the park, when visitation levels are low. As in alternative 1, use levels may increase in the future and it is possible, albeit unlikely, that some visitors might see a wolf in the mainland unit and affect its behavior. But this would not be expected to stop wolves from coming into the area or change their numbers, distribution, or use of the park. Any adverse impacts that would occur would be negligible and long term.

Cumulative Impacts. As described in the piping plover recovery plan, increasing habitat loss, recreational pressure, predation, and contaminants are likely responsible for continuing population declines of the piping plover throughout its range (USFWS 2003). Outside of the park, habitat loss and modification has historically affected the Great Lakes region, although this impact is now thought to be occurring at a much reduced level (J. Trick, biologist, U.S. Fish and Wildlife Service, pers. comm., October 22, 2008). Predation and disease, the use of motorized vehicles on beaches, recreational activities on beaches (e.g., beach walking, bike riding) likely will continue to affect the birds. Contaminants, pollution, and noise from human activities within and outside the park also may be affecting the species, although this is unknown. Although actions are being taken to protect piping plovers, such as controlling human access to nesting areas and educating the public, the species is likely to continue to be imperiled during the life of this plan.

Independent of the alternative, park staff would continue to monitor and protect all piping plover nest sites.

Alternative 2 would have a beneficial effect on the protection of piping plovers on Long Island. When this beneficial impact is added to the effects of actions occurring outside the park, there would overall be a long-term, adverse, cumulative impact. However, the effect of alternative 2 on the overall

cumulative impact would be a very small beneficial increment.

Wolves have been increasing in Wisconsin, and no known developments or actions are expected to substantially affect the wolf population, habitat, and prey on the Bayfield Peninsula. Although it is possible that the wolf may be delisted as a federally endangered species in the future, which may result in the removal of some wolves in the state, this would not be expected to affect the overall wolf population in the region of the park. Adding the negligible effects of alternative 2 to the other past, present, and foreseeable events in the area would not result in a cumulative impact to the wolf population.

Conclusion. No new developments or actions would occur on the beaches under alternative 2 that would have the potential to affect piping plover in the park. Visitor use on island beaches would continue to have the potential to disturb plovers, but with increased NPS presence on Long Island and the continuation of other protection measures, impacts would be expected to be negligible. Thus, alternative 2 may affect, but would not adversely affect, the park's piping plovers. No impacts would occur that would be considered unacceptable or result in an impairment of the park's resources and values. The effect of alternative 2 added to the effects of other past, present, and foreseeable future actions occurring outside the park would result in a long-term, adverse, cumulative impact, although the increment added by the alternative would be beneficial and very small.

The new developments and management actions, and changes in visitor use as a result of alternative 2 would not affect the area's overall wolf population and habitat. As in all of the alternatives, rare encounters between wolves and visitors may have a negligible adverse impact on a few wolves in the area, but this would not affect the overall population. Thus, alternative 2 may affect, but would not be likely to adversely affect, the park's wolf population. No cumulative impacts would occur, nor unacceptable

impacts, nor impacts that would result in an impairment of the park's resources and values.

Natural Soundscape

Analysis. In alternative 2 noise would result from the construction and use of several new developments, including campsites, trails, day use areas, a new ranger station and access ramp at Meyers Beach, trailer pads and a new visitor center at Little Sand Bay, and a new visitor center/operations facility in Bayfield. In some of these areas, the noise from construction equipment (e.g., chainsaws) would be minor to moderate, but it would be temporary and localized, and would occur at different times and different places in the park. In some areas where there are other people and facilities, such as Meyers Beach, Bayfield, and Little Sand Bay, the impact of this noise would be less than in areas where there are relatively few people, such as on Basswood Island.

As in alternative 1, noise from NPS maintenance and management activities, such as trail maintenance, grass mowing, pumping of vault toilets, and restoration activities, would continue to be heard occasionally on the park's islands. Most noise from these activities would be in or near developed areas that are already exposed to noise from vehicles, motors, and visitors. Overall, noise from ongoing maintenance and restoration activities would have a minor to moderate, adverse impact on the natural soundscape in local areas, depending upon the activity, presence of other facilities and people, vegetation, and wind. Although the impacts would be of short duration, because they would occur over the life of the plan the impact would be long term.

In alternative 2, during much of the year, particularly during the winter, there would continue to be few noises due to the absence of people. However, during the peak use season, there would continue to be moderate levels of noise due to visitors and motorboats stopping at the islands. Noise levels would be most noticeable primarily in developed areas

and popular use areas, such as the light stations, anchorages, or docks at Rocky, South Twin, Raspberry, Oak, and Sand islands, the Stockton Island Visitor Center, Little Sand Bay, and Meyers Beach. Noise levels would also likely be moderate at times at Meyers Beach during the winter, when visitors go out to see the ice caves. These impacts would be brief, but would increase in intensity and duration during holidays and weekends when high numbers of visitors are present. Noise from regular concessioner island cruise service in the summer to Raspberry, Stockton, and Oak islands also would continue, with large groups of people disembarking on these islands. In addition, under alternative 2, there would be the potential for increased use on several islands, which in turn would increase the potential for noise. But most of these people would likely go to the popular use areas, and the increase in visitor numbers would not be expected to substantially increase noise levels. Because visitor use levels overall in the park in alternative 2 would be about the same as in alternative 1, the impacts of noise from visitors in the two alternatives would be about the same—minor to moderate, long-term, adverse noise impacts in local areas on the mainland and most islands throughout Apostle Islands National Lakeshore.

Cumulative Impacts. Noise from outside the park has affected the park’s soundscape in the past and will continue to do so in the future. As described in the “Affected Environment” chapter, depending on location and wind direction, common human-caused sounds include engines from watercraft passing near the park, vehicles on roads on the mainland, sounds from logging operations, and urban sounds from Bayfield would continue to be heard in the park. Noise from the concession boat would continue to be heard not just at the islands it visits, but also on the islands it passes by. In the winter, noise from snowmobiles passing by the park would continue to be heard.

It is possible in the future that events like the speedboat “poker run” and other unregulated activities may occur just outside the park boundary, generating substantial noise. In addition, developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in noise during and after the construction period in these areas.

These adverse noise impacts would be minor to moderate (depending upon the type of noise and location), intermittent, and long term—occurring every year.

When these impacts are added to the continuing impacts of alternative 2 there would be the potential for a long-term, minor to moderate, adverse, cumulative impact on the natural soundscape. However, these cumulative impacts would primarily occur at certain times in the summer, such as weekends. The actions in alternative 2 would add a very small increment to the overall cumulative impact.

Conclusion. Under alternative 2, most of the park would remain relatively quiet, with some noise affecting the natural soundscape. Alternative 2 would result in short- and long-term, minor to moderate, adverse impacts due to the construction and use of new facilities on the islands and mainland. Minor to moderate, adverse noise impacts also would occur in local areas on the mainland and most islands in Apostle Islands National Lakeshore, particularly in developed areas, due to visitor use and NPS maintenance and management activities. None of these noise impacts, however, would be unacceptable or be of a magnitude to result in an impairment of the park’s resources and values. There would be the potential for a long-term, minor to moderate, adverse cumulative impact to the soundscape when the noise resulting from implementing this alternative is added to noise from activities outside of the park. But the increment added by alternative 2 to the overall impact would be very small.

WILDERNESS CHARACTER

Analysis. Alternative 2 would have many of the same effects on wilderness character as alternative 1. No major changes in management would occur in the Gaylord Nelson Wilderness in alternative 2—the area would continue to be managed largely as it is now.

Like alternative 1, the vast majority of wilderness would remain untrammelled in this alternative. Activities that are nonconforming but allowed, such as nonnative species control and environmental restoration, would occur in localized areas and have a trammeling effect. Since these activities would most likely continue at the same level as in the no-action alternative, there would be no new impact from this alternative.

Although use levels would increase on several islands, it is expected that most of these visitors would stay in popular use areas and not venture into the wilderness. Thus, like alternative 1, most of the wilderness area would likely receive very little use. There would continue to be a few places in the wilderness area where relatively large groups of people (10–30+) may gather at times, particularly on weekends and holidays; these areas could include the beaches at the southeast side of Raspberry Island, and on the north side of York Island. In these areas, opportunities for solitude would be diminished.

Clustering campsites in the wilderness area would reduce opportunities for solitude for some campers, resulting in a minor, long-term, adverse impact. On the other hand, relocating the Oak Island group campsite out of the wilderness area would increase opportunities for solitude in this area, resulting in a minor, long-term, beneficial impact.

No new developments would occur in the wilderness area, although some campsites may be reconfigured and clustered. As in alternative 1, in a few other areas of the

wilderness, signs of people, including hiking trails, campsites, and some historic structures, would be evident, as would occasional user-created trails and trampled vegetation or bare ground from informal campsites. Nevertheless, most visitors in this alternative would continue to find what they perceive to be natural conditions in most of the wilderness area—visitors would continue to find a forested landscape generally appearing untrammelled by people, with few obvious signs of disturbance or alteration.

The removal of the Oak Island group campsite from the wilderness area and restoration of the site would make this area once again appear more natural. Thus, the actions in alternative 2 would have a long-term, minor, beneficial effect on the apparent naturalness of the area.

Implementation of alternative 2 would not alter opportunities for primitive recreation in the wilderness area. Opportunities for primitive, unconfined recreation would continue to be present on most of the islands. Day-use visitors would have complete freedom to go wherever they pleased, except for the small number of areas that are closed for resource protection purposes (e.g., Gull and Eagle islands). For visitor safety and resource concerns, permits for overnight camping at designated campsites and for zoned camping would continue to be required. The permit system would ensure that overcrowding of campers does not occur in the wilderness. Although most visitors would likely agree that there would be outstanding opportunities for primitive, unconfined recreation on the islands, permit and camping requirements would continue to slightly diminish these qualities, resulting in a minor, long-term, adverse impact on primitive recreation. It is possible that the implementation of user capacity indicators and standards could result in additional restrictions on visitor use if standards were exceeded, but it is not possible to speculate what actions, if any would be taken—and obtrusive use restrictions would only be taken

as a last resort, if no other actions could correct the problem.

Cumulative Impacts. Actions independent of alternative 2 have affected, and would likely continue to affect the wilderness character of the park. Noise generated from human activities outside of the park, such as that generated from the use of motorized boats, would continue to affect some visitors' perceptions of solitude, resulting in a long-term, minor adverse impact to wilderness character. As noted in the impact topics above, the spread of nonnative species and climate change have affected, and are likely to continue adversely affecting the park's biological communities—including the wilderness area—resulting in a long-term, minor to moderate, adverse impact to wilderness character (i.e., adverse effect on apparent naturalness of the wilderness areas). On the other hand NPS staff have worked to restore disturbed areas in wilderness and likely will continue to do so in the future. This would have a minor, long-term, beneficial impact on wilderness character.

When all of the above actions are added to the impacts in alternative 2, there would be the potential for a minor to moderate, long-term, adverse cumulative impact on the wilderness character. However, alternative 2 would add a very small increment to the overall cumulative impact.

Conclusion. In this alternative, in most of the wilderness area, visitors would be able to find outstanding opportunities for solitude and primitive, unconfined recreation in what most people would perceive to be a natural landscape. Overall, alternative 2 would have a minor, long-term, beneficial impact compared to alternative 1. The relocation of the Oak Island group campsite out of the wilderness area would have a long-term, minor, beneficial impact on opportunities for solitude and apparent naturalness in this area. On the other hand, alternative 2 would have the same minor, long-term adverse impact to the area's wilderness characteristics as alternative 1, due to the continuing requirement to obtain a

permit to camp in the wilderness. Clustering campsites also would have a minor, long-term, adverse impact, due to some visitors perceiving a loss of solitude. No changes would occur with regard to the untrammelled character of the wilderness.

None of these impacts to wilderness character would be considered unacceptable. When the effects of actions occurring independent of the alternative are added to the effects of alternative 2 there would be the potential for a minor to moderate, adverse, cumulative effect on wilderness character—albeit alternative 2 would add a very small increment to this overall cumulative impact.

CULTURAL RESOURCES

Historic Structures / Cultural Landscapes

Light Stations

Under alternative 2, the park would consider more extensive preservation treatments of selected light stations for interpretive and educational purposes. Initial stabilization of the light stations would be carried out as needed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to structurally reinforce, weatherize, and correct unsafe conditions. With particular regard to the standards and guidelines for preservation, the existing form, features, and architectural detailing of the light station buildings and structures would be retained. As needed, shoreline stabilization would also be undertaken (such as that completed for the Raspberry Island and Outer Island light stations) to control erosion of the shoreline embankments that has threatened the historic structures. These measures would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the historic light stations.

In addition to the Raspberry Island light station, restoration and/or rehabilitation of other light stations (e.g., those on Sand, Michigan and Outer islands) would be undertaken to enhance visitor interpretation, education, and recreational opportunities. As

feasible, one of the light stations could be rehabilitated to permit overnight visitor lodging, and portions of the Long Island light station could be rehabilitated for NPS staff housing. In accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (with particular attention to the standards and guidelines for rehabilitation), historic building materials and character-defining features would be protected and maintained to the extent possible, although extensively deteriorated, damaged, or missing features would be replaced with traditional or substitute materials. Possible alterations and additions may be appropriate to permit efficient contemporary uses of the structures and buildings. Although full restoration may not be feasible, partial restoration carried out in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* may be appropriate in certain instances to approximate the appearance of selected light stations (or portions thereof) at particular historically significant periods. Rehabilitation and/or restoration of the light stations carried out in accordance with the *Secretary's Standards* would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on these historic properties.

The cultural landscapes associated with restored or rehabilitated light stations would also be partially or fully restored or rehabilitated in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties (with Guidelines for the Treatment of Cultural Landscapes)*, and cultural landscape report recommendations. The cultural landscapes of other light stations would be preserved and stabilized to maintain the integrity of cultural landscape features identified as contributing to site significance. Historic views may be obscured in some instances by trees and other vegetation encroaching into the larger surrounding areas historically reserved for the light stations. However, preservation, rehabilitation, and restoration of cultural landscape elements associated with the light stations would have

long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the historic properties.

Other Historic Structures and Cultural Landscapes

National register-listed or national register-eligible structures and buildings associated with historic farmsteads, tourism/recreational sites, fishing and logging camps, etc. would be preserved and stabilized in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Contributing cultural landscape features associated with these sites would also be preserved and stabilized. The historic Hokenson fishery on the mainland at Little Sand Bay may be considered in future planning for rehabilitation and adaptive use as a visitor center or contact facility. These actions would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on historic properties.

For selected historic properties currently under use and occupancy leases or life estates (i.e., the former fishing settlement and later resort on Rocky Island, the West Bay Club on Sand Island, and Shaw Point / Camp Stella on Sand Island), the park staff would undertake various preservation treatments and adaptive uses once leases have expired and/or private occupancy has ceased. Historic structures would be preserved at the Rocky Island settlement, and one or more docks may be rehabilitated. The West Bay Club lodge and dock would be preserved and possibly rehabilitated for public overnight use, and the historic road between the West Bay Club and East Bay would be used for trail access. At Shaw Point, docks would be rehabilitated and contributing Camp Stella historic structures would be preserved and possibly rehabilitated for public overnight use. The historic road between Shaw Point and East Bay would be used for trail access. Contributing structures at the Hansen farm would be stabilized and preserved, and its cultural landscape would be partially restored. Implementation of these actions in accordance with the *Secretary of the*

Interior's Standards for the Treatment of Historic Properties would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on these historic properties.

Cumulative Impacts. Historic buildings, structures and cultural landscapes at the park are susceptible to severe weathering and storm damage from harsh climatic conditions. Forest vegetation encroaching near historic structures and sites also presents a risk of fire damage from increasing fuel loads. Park staff also face logistical challenges and the additional expenses associated with transporting materials and equipment by boat from the mainland to island docks, and subsequently from docks to worksites on the islands to carry out preservation activities. Consequently, preservation treatment of historic buildings, structures and cultural landscapes may not always occur in a timely manner and/or may be deferred in some instances. The integrity of these historic properties can be adversely affected if historic fabric deteriorates or is lost. However, in conformance with the *Secretary's Standards* and as funding permits, the national lakeshore continues to carry out stabilization and preservation of historic structures (e.g., reroofing, repointing, painting, structural reinforcement and other repairs) to arrest deterioration and to retain as much of the historic integrity of these structures as possible. These measures, in addition to more extensive preservation treatments such as the rehabilitation and restoration of the Raspberry Island light tower and keeper's quarters, have had long-term beneficial impacts.

The impacts associated with implementation of alternative 2 would have long-term negligible to minor adverse impacts and long-term beneficial impacts on the park's light stations, and other historic buildings, structures, and cultural landscapes. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. However, the impacts of the other actions

described above, in combination with the adverse and beneficial impacts of alternative 2, would result in long-term negligible to minor adverse cumulative impacts.

Conclusion. Implementation of actions proposed by alternative 2 would have long-term negligible to minor adverse impacts on the park's light stations and other historic structures, buildings and cultural landscapes listed in or eligible for listing in the National Register of Historic Places. Adverse impacts would result primarily from potential alterations, additions and/or replacement of historic fabric and other character-defining features determined necessary to preserve, restore or rehabilitate historic structures and landscape elements. However, implementation of appropriate preservation, restoration or rehabilitation treatments in accordance with the *Secretary's Standards* would also help ensure the long-term preservation of these historic properties — a beneficial impact. There would also be long-term negligible to minor adverse cumulative impacts on these historic properties from implementation of alternative 2 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the national lakeshore's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 2 would result in no adverse effect on historic structures and cultural landscapes.

Archeological Resources

Efforts to enhance visitor accessibility to nonwilderness areas on the islands would entail some new development such as day-use areas and campsites on Sand and Basswood islands, new trails on selected islands, and improvements to public docks. The Stockton Island – Presque Isle campground would be relocated to Presque Isle. In wilderness areas, some camp sites and trails may be reconfigured or relocated. New construction on the mainland unit would include a beach access ramp and an NPS ranger station at Meyers Beach, and a public day-use area at Little Sand Bay.

Ground-disturbing construction activities associated with development proposals have the potential to impact archeological resources. In consultation with the Wisconsin state historic preservation office and affiliated tribal historic preservation offices, the Park Service would ensure that archeological assessments and surveys are carried out for all areas of potential effect proposed for development prior to construction. Known resources would be avoided to the greatest extent possible. If during construction previously undiscovered archeological resources were uncovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed through further consultation. Few, if any, adverse impacts would be anticipated.

NPS archeologists would continue to monitor the condition of known archeological sites, and would undertake appropriate protection and stabilization measures as necessary to reduce or avoid site impacts possibly occurring from natural erosion, visitor use, or other factors. NPS archeologists would also continue to carry out survey inventories and documentation of archeological resources in fulfillment of section 110 requirements of the National Historic Preservation Act. Continuation of archeological resource management actions under existing laws and

policies would have long-term negligible to minor adverse impacts on archeological resources.

Cumulative Impacts. Archeological resources at the park (and throughout the area) are subject to a variety of disturbances associated with shoreline erosion and other natural erosion processes, high winds that can overturn trees and dislodge buried sites, ground-disturbing construction activities, inadvertent visitor use impacts, artifact looting, etc. These factors can contribute to adversely affect the integrity of archeological resources as the potential of impacted sites to yield important prehistoric or historic information is diminished and/or irretrievably lost. However, understanding of regional prehistory and history can also benefit as archeological information continues to be acquired through ongoing research and perhaps from data recovery investigations carried out in fulfillment of mitigation requirements.

The impacts associated with implementation of alternative 2 would have long-term negligible to minor adverse impacts on the park's archeological resources. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. Consequently, the beneficial and adverse impacts of the other actions described above, in combination with the impacts of alternative 2 would cumulatively result in long-term negligible to minor adverse impacts on archeological resources.

Conclusion. Implementation of actions proposed by alternative 2 would have long-term negligible to minor adverse impacts on the park's prehistoric and historic archeological resources listed in or eligible for listing in the National Register of Historic Places. There would also be long-term negligible to minor adverse cumulative impacts on archeological resources from implementation of alternative 2 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the national lakeshore or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the national lakeshore's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 2 would result in no adverse effect on archeological resources.

Ethnographic Resources

Efforts to enhance visitor accessibility to nonwilderness areas on the islands would entail some new infrastructure development such as day-use areas and campsites on Sand and Basswood islands, new trails on selected islands, and improvements to public docks. The Stockton Island – Presque Isle campground would be relocated to Presque Isle. In wilderness areas, some camp sites and trails may be reconfigured or relocated. New construction on the mainland unit would include an accessible visitor use ramp and NPS ranger station at Meyers Beach, and a public day-use area at Little Sand Bay. Although management information to identify the existence or location of ethnographic resources is limited at the park, ethnographic resources could potentially be impacted as a result of these ground-disturbing construction activities. Continuing consultations with the Ojibwe and other affiliated tribes to identify ethnographic resources would minimize the possibility that unknown sites could inadvertently be disturbed by visitor use or NPS activities. Long-term negligible to minor adverse impacts would be anticipated.

NPS staff would continue to collaborate with the Ojibwe and other affiliated tribes to identify and evaluate potential ethnographic resources by conducting appropriate research and investigations (i.e., ethnographic overviews and assessments, traditional use studies, ethnographic landscape studies, oral histories, etc.). Identified ethnographic resources meeting the criteria of national register-eligibility would be documented and managed as "traditional cultural properties." Efforts to identify, document and protect ethnographic resources would have long-term, beneficial impacts on these resources should they be found to exist in the park.

In consultation with affiliated tribes, the Park Service would continue to permit customary harvest and consumptive use of park resources, including the rights to hunt, fish and gather plants and berries. These activities would be carried out in accordance with park purposes and NPS policies, with the provision that they do not to adversely affect park wildlife or the reproductive potential of plant species, or otherwise adversely affect park resources. Also in accordance with applicable laws and policies, the Park Service would permit tribal access to park areas for traditional religious, ceremonial, and other customary activities. In consultation with the tribes and consistent with tribal goals, the Park Service would protect sacred sites and other ethnographic resources should these be identified. Providing and protecting tribal access to traditional use areas in the park, and protection of customary hunting, fishing and gathering activities would have long-term, beneficial impacts on ethnographic resources.

Cumulative Impacts. Ethnographic resources at the park (and throughout the region) are subject to a variety of disturbances associated with erosion and other natural processes, ground-disturbing construction or development activities, inadvertent visitor use impacts, blocked access to traditional use areas, artifact looting, etc. In part because of tribal concerns for retaining the confidentiality of ethnographic resources, land managers are occasionally challenged to

provide adequate protection for these resources because of the limited information available regarding their potential existence, nature and location. These factors can contribute to adversely affect the integrity of ethnographic resources having particular significance to tribes and other cultural groups. However, ongoing research and information gathered from tribal consultations can provide long-term benefits by increasing understanding and appreciation for the protection of regional ethnographic resources.

The impacts associated with implementation of alternative 2 would have long-term negligible to minor adverse impacts on the park's ethnographic resources. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. However, the impacts of the other actions described above, in combination with the impacts of alternative 2, would result in long-term negligible to minor adverse cumulative impacts.

Conclusion. Implementation of the actions proposed by alternative 2 would have long-term negligible to minor adverse impacts on ethnographic resources at park. Long-term negligible to minor adverse cumulative impacts on ethnographic resources would also occur from implementation of alternative 2 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5,

Assessment of Adverse Effects), the National Park Service concludes that implementing alternative 2 would result in no adverse effect on ethnographic resources.

VISITOR USE AND EXPERIENCE

Ability to Access the Park, Including Universal Access

In alternative 2, the focus would be on providing opportunities for more visitors to have an island experience, encouraging additional transportation options for visitors to reach some of the inner islands who don't have their own boats or the skills to deal with challenging Lake Superior conditions. Further, some existing docks on the islands would be improved, including some associated with former use and occupancy/current life estates. These improvements would increase access opportunities to some of the most desired locations in the park, which was encouraged by some members of the public. Further, these improvements would increase the diversity of visitors that could partake in an island experience, which is considered a fundamental value of the park. These access improvements would be considered a long-term, major, beneficial impact.

In this alternative, in addition to the existing facilities that are accessible to visitors with disabilities, a new access ramp to the beach that is accessible would be added at Meyers Beach. The addition of this facility would enhance visitors' opportunities to more easily access Meyers Beach, a popular location for viewing the islands and the nearby sea caves. This new facility would be considered a long-term moderate beneficial impact.

Lake and Island Related Recreational Opportunities and Experiences

As noted, this alternative would focus on providing more people the opportunity to have an island experience. This would include additional opportunities for recreation

facilities on the nonwilderness areas of the islands. Existing lake and island recreational opportunities would continue to be available. Most of Sand, Basswood, and Long islands would be in the backcountry zone to protect resources while also allowing for exploration of additional nature based recreation opportunities.

New facilities would include new trails on selected islands, and increased designated campsites and group campsites on Sand and Basswood islands. Also, new trail opportunities that make use of historic road routes may be provided to connect the West Bay Club and East Bay, as well as Shaw Point and East Bay. In addition, a day-use site for large groups and a few day-use sites for small groups would also be provided in appropriate locations. All of these facilities would increase the diversity of day and overnight opportunities available to island visitors. The opportunity to have an “island experience” is considered a fundamental value of the park. In addition, many of these additional facilities were desired by the public, particularly the additional group campsites. The addition of these facilities to the existing opportunities on the islands would be a long-term moderate beneficial impact.

This alternative also includes the proposal to relocate most of the Stockton Island – Presque Isle campground to Presque Isle to mitigate existing resource impacts. This campground is popular for many repeat visitors, and the location of the campsites along the shoreline is considered highly desirable due to the great lake views and privacy between sites. This proposal might detract from the visitor experience for repeat visitors who enjoy staying at a particular site in the existing campground. However, the new sites on Presque Isle will likely have similar views, more amenities, and a more efficient and effective design which will result in a higher quality campground, resulting in a long-term moderate beneficial impact on the visitor experience. During the construction of the new campground and the relocation of camping activities, there will be short-term

minor adverse impacts to visitors due to noise, temporarily restricted access, and visual intrusions.

The park will continue to provide outstanding opportunities for solitude, quiet, “wildness,” connection with nature, and firsthand discovery of the islands’ history.

Opportunities for solitude, quiet and connection with nature will be enhanced by several proposals in alternative 2. First, the majority of the wilderness areas would be in the primitive zone that would direct the National Park Service to continue protection of the values of natural quiet and solitude, and opportunities for visitor contemplation, naturalness and primitive recreation. These are some of the most highly valued characteristics of the park, and the preservation of these values would be a long-term major beneficial impact. Further, the group campsite on Oak Island will be relocated from the designated wilderness to a nonwilderness area, minimizing potential impacts to the soundscape and perceptions of crowding in the designated wilderness area. This would result in a long-term minor beneficial effect.

There would be no net gain in campsite and trail opportunities in designated wilderness, but there is a possibility that some designated campsites and trails may be reconstructed and relocated to protect resources. For those visitors that enjoy camping at a particular wilderness campsite or hiking a specific trail, the potential relocation or realignment of these facilities may result in a long-term minor adverse impact. In addition, this may include a short term minor adverse impact during the relocation and construction of new sites and trails.

Although this alternative includes high levels of protection for the qualities of solitude and primitive recreation, the emphasis in this alternative on providing more visitors with an island experience may make achieving these desired visitor experiences more challenging. The potential increase in visitor use levels and the potential for larger group sizes in some

locations may exacerbate some of the current impacts related to crowding and noise impacts at high use locations, including docks and boat launches and landings. Further, visitor access to some of the former use and occupancy/current life estates and possibly more light stations may increase use levels, including overnight use, which may increase the potential for crowding and noise impacts on adjacent areas. These impacts would be localized and most apparent during the peak season resulting in a long-term minor adverse impact.

To help mitigate these concerns, this alternative includes the institution of the user capacity indicators and standards to guide long-term visitor use management in the park. The park would monitor several indicators related to visitor experience and resource impacts that identify if and when additional management strategies are needed to achieve desired conditions. The park would take all actions necessary to ensure that these indicators stay within standard to protect the highly valued opportunities for solitude in the park. The inclusion of these types of indicators in the park's monitoring program would be a long-term moderate beneficial impact. Specific actions to achieve the standards identified in this management plan would be evaluated under the requirements of the National Environmental Policy Act, the National Historic Preservation Act, and other applicable laws and policies.

Mainland Recreational Opportunities and Experiences

In this alternative, the mainland would be primarily in the backcountry zone, except for Little Sand Bay and Meyers Beach that would be zoned as frontcountry. This would direct the National Park Service to promote outstanding opportunities to enjoy natural resources and solitude in the backcountry zone and convenient and easy access to developed, high use, recreational and interpretive areas in the two frontcountry zones. This zoning pattern would continue to promote concentration of high use and

educational opportunities in the existing developed areas, while promoting values of nature-based recreation and contemplation in other areas of the mainland. This supports much of the desired condition heard from the public during scoping and provides a long-term, moderate, beneficial impact to recreation opportunities on the mainland.

This alternative also includes specific strategies to improve mainland recreational opportunities. As noted above, improved access to the beach at Meyers Beach will improve recreation opportunities by providing access to a greater diversity of visitors. Another specific strategy is to provide a large group, day-use area at Little Sand Bay. Currently, the park does not have facilities that purposively accommodate groups, although groups do occasionally congregate at Little Sand Bay. Having appropriate facilities for this purpose will improve the range of visitor opportunities allowed on the mainland, and concentrate group activity in a specific location to minimize its impacts on other visitors, resulting in a long-term minor beneficial impact.

This alternative would not include extension of the Lakeshore Trail or more camping opportunities, which were specific facilities desired by some members of the public. The lack of some of these desired improvements in this alternative would continue to result in a long-term minor adverse impact.

Opportunities to Understand the Significant Stories of the Apostle Islands

In this alternative, the park headquarters, operations center, and visitor center will be consolidated at a new Bayfield location. This facility will include improved and expanded exhibit areas and stations for visitor contact with NPS staff and volunteers. This would improve the ability of visitors to understand the significant stories and resources of the park in a centralized, highly visible, and modernized facility. It is likely this facility would capture more visitors to the park due to the improved location and visitor education

offerings. This would result in a long-term moderate beneficial impact on understanding of the significant stories of the Apostle Islands.

In addition, this alternative includes the replacement of the Little Sand Bay Visitor Center with a smaller visitor center, possibly through the conversion of the historic Hokenson House. The current Little Sand Bay Visitor Center is in poor condition and has very limited space for exhibits. A replacement visitor center that focuses on providing easily accessible, high-quality orientation, interpretation, and information would likely improve the visitor experience at this location and be a long-term minor beneficial impact. This alternative would not include any changes to the Stockton Island Visitor Center or the Great Lakes Visitor Center. Also, this alternative includes development of an Ojibwe cultural demonstration area on Basswood Island, which would increase educational opportunities related to the history and culture of the Ojibwe.

It is likely that the emphasis in this alternative on providing more visitors with an island experience will create a future need for additional education and orientation via non-personal services such as trailhead and boat dock kiosks, trail signs, and park brochures. The park will assess the need for additional locations and types of information to support the overall desired conditions of increasing exposure of visitors to the islands—resulting in a long-term, minor beneficial impact.

In this alternative, many of the park's significant cultural sites and resources will have improved visitor access and interpretation. Specifically, this alternative states that additional light stations may be rehabilitated for interpretation purposes, with the possibility of overnight use at one light station if that is found to be feasible. Further, the cultural landscapes of the rehabilitated light stations would be partially or fully restored. Visiting the light stations is a popular activity for most visitors, and is the main attraction of the park for some visitors. Having the opportunity to experience and

learn about the light stations and maritime history on Lake Superior is considered a fundamental value of the park. The increased access and interpretation of the light stations, including the potential for overnight use, would be considered a long-term, major, beneficial impact.

In addition, several of the former use and occupancy/current life estates will be made available for visitor access and interpretation as the opportunity comes available. The Rocky Island, West Bay Club, Shaw Point, and Hansen farm sites would have visitor access, including public use of the nearby docks (if applicable), and visitor interpretation with non personal and possibly some personal services. The West Bay Club and Camp Stella may also be adaptively reused for overnight use if that action is found to be feasible, and the associated docks may also have overnight use permitted. An overnight experience in these historic structures would allow for complete immersion in the cultural landscape. Further, historic roads would be reestablished as trails to connect the different cultural landscapes. These visitor access and interpretation opportunities would greatly enhance visitors' exposure to and understanding of the human history on the islands in the park—resulting in a long-term, moderate, beneficial impact.

Finally, the Manitou fish camp would be stabilized and the cultural landscape would be partially rehabilitated. These improvements would allow for continued interpretation of this resource, resulting in a long-term, minor, beneficial impact.

Visitor Safety

This alternative includes a ranger station at Meyers Beach, which will increase NPS presence, improving visitor orientation and safety information dissemination, as well as response times to this area of the park. Due to the high levels of public use of Meyers Beach and the nearby sea caves, this will greatly improve visitor safety for a large number of visitors to the park—creating a long-term,

moderate, beneficial impact. Further, the improved boat launch at Meyers Beach will improve visitor safety for those launching boats, resulting in a long-term, minor, beneficial impact.

Further, the relocation of the visitor center in Bayfield to a more visible location will likely increase the number of park visitors that access the visitor center; therefore the ability of the National Park Service to distribute safety information would be greater—creating a long-term, moderate, beneficial impact.

The improvements to the Little Sand Bay Visitor Center may slightly increase the amount of safety information that is effectively disseminated to park visitors who visit this area of the park, resulting in a long-term, minor, beneficial impact to visitor safety. The rehabilitation of the Long Island light station for NPS housing will increase the NPS presence on Long Island, improving interpretation and visitor safety. This would result in a long-term, minor, beneficial impact.

This alternative also includes the proposal to relocate the Stockton Island – Presque Isle campground from the tombolo to Presque Isle, which will help reduce the interaction of visitors and bears on Stockton Island. This will improve visitor safety on Stockton Island, and result in a long-term, minor, beneficial impact.

Cumulative Impacts. There are no actions or developments foreseen within or adjacent to the park that would likely affect visitor use and experience. There is the possibility of a slight increase in visitation or a change in visitor interests and demand due to potential changes in regional populations or national recreation trends. The likelihood of these changes is unknown at this time. If this were to occur, it may cause a slight increase in existing visitor use concerns such as crowding and conflicts at high use docks and attraction sites. Also, any significant effects from climate change could have a minor to major effect on visitor use and experiences. Of particular concern is the likely warmer water and longer

seasons, punctuated by more severe and unpredictable storms, suggesting a long term adverse impact on visitor safety as more visitors are likely to be vulnerable to Lake Superior without adequate preparation. Other changes that could result in impacts include reduced access to infrastructure and alterations to wildlife watching and fishing opportunities as a result of habitat changes.

Conclusion. Alternative 2 includes minor to major beneficial impacts resulting from enhanced access to the islands, increased recreational opportunities in specific areas on the islands and mainland and the preservation of natural quiet, solitude and primitive recreation throughout the majority of the park. This alternative would provide more visitors with an opportunity to have an island experience, which is considered a fundamental value of the park. Further, this alternative includes proposals to improve access and interpretation of significant cultural sites, and improvements in the location and condition of the park’s visitor centers. These proposals would increase visitor opportunities to understand the significant stories of the Apostle Islands.

Finally, infrastructure improvements such as a ranger station at Meyers Beach, relocation of the visitor center in Bayfield and increased NPS presence on Long Island would result in minor to moderate improvements in visitor safety. However, some of the proposals to increase visitor opportunities and facilities, including access to certain cultural sites, may increase existing site-specific adverse impacts such as crowding, conflicts and noise. Finally, any effects resulting from changes in population, recreational trends or climate change may result in additional minor to major adverse effects, but the ability to predict the type or intensity of these impacts is limited at this time.

PARK OPERATIONS

Analysis. As in alternative 1, in alternative 2 the park’s physical geography would pose an

operational challenge. However, under alternative 2 actions would be taken to reduce the fragmentation of park staff and facilities. Locating the facilities now at Roys Point on the waterfront in Bayfield, along with the visitor center, building a new ranger station at Meyers Beach, and relocating some administrative staff from Little Sand Bay to Bayfield would improve the effectiveness and efficiency of park staff, and increase their productivity. The new maintenance facility, which would be constructed specifically to meet the needs of park staff, would also improve staff efficiency in doing their jobs. Greater staff efficiency reduces the carbon footprint and would help achieve energy reduction goals; however the new maintenance location in Bayfield would be farther from many locations within the lakeshore, potentially adding to the total number of boat miles.

Although the separation of the park headquarters from the new Bayfield visitor center/maintenance facility would still separate staff, compared to alternative 1, the improvements in alternative 2 would result in a long-term, beneficial impact on park operations.

Unlike alternative 1, in alternative 2 several new actions and developments would occur, which would affect park operations. The construction of new facilities and trails (e.g., building an access ramp at Meyers Beach, providing a day use area at Little Sand Bay, moving the Stockton Island – Presque Isle campground to Presque Isle), and rehabilitation of existing facilities (e.g., rehabilitating the Bayfield park headquarters, rehabilitating the Manitou fish camp and Long Island light station) under this alternative would require additional resources for operations and maintenance and additional efforts from maintenance, interpretation and resource management staff (as well as more staff). However, assuming additional funding and staff are provided as called for under the alternative, the additional developments and new actions in alternative 2

should have a negligible, long-term, adverse effect on park operations.

With several additional employees the park staff would be able to better achieve desired conditions in program areas such as resource protection, visitor services, wilderness management, cyclic maintenance, and the deferred maintenance backlog would likely decrease. This would have a long-term, beneficial impact on park operations.

Cumulative Impacts. No major new park projects or actions, independent of this plan, are expected over the life of this plan. Thus, no foreseeable actions would combine with the actions proposed in alternative 2 that would result in cumulative park operations impacts

Conclusion. Compared to alternative 1, alternative 2 would have a long-term, beneficial effect on park operations, due primarily to actions taken to improve park operational facilities, decrease staff fragmentation, and increase staffing levels. Although new developments and management actions in alternative 2 would require additional time and resources to initiate and maintain, the increase in staffing and funding should meet these needs, resulting in a negligible, long-term, adverse effect on park operations. No cumulative impacts on park operations would be expected as a result of this alternative.

SOCIOECONOMIC ENVIRONMENT

Analysis. Alternative 2 would affect the socioeconomic environment in a variety of ways. Under this alternative there would be both increases in visitor spending and increases in park expenditures. As noted in the alternative there would be a number of new opportunities on the islands for visitors (e.g., the development of trails and campsites on Sand, Oak, and Basswood islands, the restoration of another light station like the Raspberry Island light station). In addition, new transportation options would be sought

to bring more visitors to the islands. And building a new visitor center on the Bayfield waterfront would attract more visitors to this facility. As a result, more visitors would likely go to the islands and spend time at the mainland visitor center. Consequently, more visitors would spend a longer time in the area. This would result in a minor to moderate, long-term, benefit to local businesses, including concessions and water taxis that transport people to the islands, guides, and outfitters. A new visitor facility located closer to the business in Bayfield also would benefit businesses located near the facility. The impact would be a long-term, beneficial impact to the socioeconomic environment.

As noted in the alternative description, the National Park Service would be spending additional funds on construction and maintenance of facilities. This would in turn have a long-term, beneficial impact on businesses that supply materials and services to the park, including local merchants, utilities, equipment suppliers, and contractors. Construction businesses would receive short-term benefits from the development of facilities in the alternative, such as the new visitor center. (How much the local economy actually would benefit would depend upon the degree to which park needs can be fulfilled within and by local businesses.) Hiring additional park staff under the alternative would also result in these individuals spending their income for housing, food, entertainment, and other services and goods, which in turn would increase revenues for local businesses. In addition, local governments would collect more tax revenues as a result of both visitor spending and park spending in the area.

As in all of the alternatives, under alternative 2 the park would continue to be an important attraction for many residents and for people considering relocation to the region, although the alternative would not be expected to cause major changes in the regional population. There would be more demands on mainland community services (e.g., water and sewer systems, local law enforcement) with visitors spending more time in the area, compared to

alternative 1, but levels would not be expected to increase to a level that would substantially change park-related demands on community services and facilities.

Cumulative Impacts. No ongoing or new park projects, independent of this plan, or other major changes on lands adjacent to the park (e.g., substantial changes in management and land use of lands adjacent to the mainland unit) are expected over the life of this plan. In the future developments such as second homes may be built on some lands adjacent to the mainland unit. With increased revenues for construction businesses, and increased tax payments, this likely would have short- and long-term, beneficial impacts on the regional economy, depending on the nature and scope of the developments. When these impacts are added to the beneficial impacts of alternative 2, there could be a long-term, beneficial, cumulative impact to the socioeconomic environment.

Conclusion. Under alternative 2 there would likely be increased spending by visitors, with more visitors spending more time in the area, increased spending by the park, and increased spending by new park employees. These changes, however, would be relatively small compared to the overall regional economy and would not be expected to change the character of the social and economic environment. Most of the benefits of the alternative would occur in the Bayfield area. Compared to the no-action alternative, alternative 2 would result in a long-term, beneficial impact. The effects of alternative 2, in combination with the potential beneficial socioeconomic impacts of future residential developments adjacent to portions of the mainland unit, could result in a long-term, beneficial cumulative impact to the socioeconomic environment.

UNAVOIDABLE ADVERSE IMPACTS

Under alternative 2, some soils and vegetation would be lost or altered due to construction of new facilities on the islands and mainland and

due to visitor use in developed and high use areas. This would include bank erosion, and trampling of vegetation on sandscapes. Some docks would continue to alter coastal processes. Visitors and construction activities also may inadvertently contribute to the introduction and spread of nonnative species and to water pollution in localized areas.

There would be loss or alteration of some wildlife habitat (and wildlife in those areas) due to construction and use of new facilities; increased visitor use in some areas may adversely affect wildlife in those areas. Short- and long-term, adverse impacts to the natural soundscape would occur due to facility construction, visitor use, and NPS maintenance activities, primarily in high use areas and during high use periods (e.g., summer weekends). Clustering of campsites in the wilderness areas would adversely affect the wilderness character for some visitors (i.e., loss of solitude). Construction of some visitor facilities, such as the new Presque Isle campground, would result in unavoidable impacts to visitors due to temporarily restricted access and visual intrusions. Some repeat visitors' experiences would be adversely affected by the relocation of the Stockton Island – Presque Isle campground to Presque Isle and the potential relocation or realignment of some wilderness campsites. Crowding and congestion at high use areas (e.g., docks) would occur during the summer, adversely affecting some visitors' experiences. Education, interpretation, and outreach efforts would help minimize, but would not eliminate, the likelihood of the above impacts

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

New actions would be taken in alternative 2 that would result in the consumption of nonrenewable natural resources and in the use of renewable resources that would preclude other uses for a period. In the

construction of new facilities, including buildings and trails, limited amounts of nonrenewable resources would be used and there would be a loss of vegetative productivity and wildlife habitat for as long as these facilities remain. These resources would be essentially irretrievable once they were committed. In addition, because it takes so long for soils to form, the loss of soils due to the construction of new facilities, visitor use in localized areas, and erosion of soil in places within Apostle Islands National Lakeshore would be an irreversible commitment of resources.

THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

As in all of the alternatives, the National Park Service would continue to manage the park to maintain ecological processes and native biological communities and to provide appropriate recreational opportunities consistent with preservation of cultural and natural resources. The vast majority of Apostle Islands National Lakeshore would continue to be protected in its current, relatively natural state and would maintain its long-term productivity. The primary short-term uses of the park would continue to be recreational use. Under alternative 2, there would be expanded (but still relatively modest) development to support recreational use and park operations, resulting in some localized loss of ecological productivity. Adverse impacts on the area's soils, water quality, vegetation, and wildlife due to visitor use also could reduce the productivity of natural resources in localized areas over time, although overall no measurable effect on the park's long-term productivity would be expected. On the other hand, efforts to restore native vegetation would increase long-term productivity of the environment in localized areas.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 3

NATURAL RESOURCES

Soils

Analysis. Several new park facilities would be built under alternative 3 that would involve ground disturbance and consequently impacts to soil. The construction and use of new interpretive trails on selected islands and new campsites on Sand and Basswood and the mainland; the relocation of the Stockton Island – Presque Isle campground to a new site; the development of a new ranger station at Meyers Beach, and the development of the mainland trail from Little Sand Bay to Sand River would all result in the loss or alteration of soil in localized areas. So would the clearing of vegetation at light stations and on the Hansen farm site on Sand Island. Site preparation and landscaping work would disturb soils in the project areas and construction equipment would disturb and compact soils. The development of trailer pads for NPS housing and a kiosk at Little Sand Bay, and a new operations/maintenance facility and staff apartments would likely occur in areas that have already been altered by past actions and developments, and thus would have no effect on area soils. A total of no more than about 2 acres of soil would likely be altered or lost by these new developments. The adverse impact on soils in the project areas would likely be moderate and long term, but from a parkwide perspective the adverse impacts due to new developments would be minor to moderate, and long term.

Visitation levels would be about the same as under alternative 1. Thus, the adverse impacts on soils due to visitor use would be expected to be minor to moderate in localized areas and long term under alternative 3. Most of the soil impacts would likely occur along or near the

shorelines of the islands that experience higher use levels.

As in alternative 1, some soils may be compacted and eroded due to some existing campsites expanding, informal “zone” campsites being created, and user-created trails being formed in areas with facilities that receive relatively high levels of use. But continuation of monitoring and establishing formal user capacity indicators and standards in alternative 3 should help ensure that an unacceptable expansion in the size of campsites does not occur. Thus, compared to alternative 1, alternative 3 would be expected to result in fewer soil impacts, resulting in a long-term beneficial impact.

Cumulative Impacts. Soils in much of Apostle Islands National Lakeshore probably have been altered by past activities (e.g., logging, agricultural practices). Some soils on lands adjacent to the mainland unit of the park may be lost or modified in the future due to new development. Also in the future, if the Quarry Bay campsites on Stockton Island were relocated, this would affect soils in a localized area. Assuming the campsites were relocated to a relatively undisturbed site, soils would be lost or modified. When these impacts are added to the minor to moderate adverse impacts under alternative 3, there would be a long-term, minor to moderate, adverse cumulative impact on area soils—although the Quarry Bay action would add a very small increment to the overall cumulative impact.

Conclusion. Most of the park’s soils would not be affected by the actions in alternative 3. However, some soils would be eroded and lost, and soil properties would be altered due to construction of new facilities on the islands and mainland, and due to visitor use in

localized areas on some islands. Overall, these adverse impacts would likely be minor to moderate and long term. On the other hand, establishing formal user capacity indicators and standards should help reduce the expansion of campsites, and prevent soil erosion. This would have a long-term, beneficial impact. No unacceptable soil impacts or impairment to the park's resources and values would result from this alternative. When the impacts of alternative 2 are added to past and foreseeable future impacts (i.e., relocation of the campsites in Quarry Bay) there would be a long-term, minor to moderate, adverse cumulative impact on area soils.

Geological and Coastal Processes

Analysis. With proper design and planning, the relocation of the Stockton Island – Presque Isle campground to Presque Isle would reduce soil impacts to the tombolo sandscape compared to alternative 1, resulting in a long-term, beneficial impact in this area.

It is expected that with proper design and planning, and with the application of appropriate mitigative measures, bank erosion due to visitors accessing the new mainland water-accessible campsites would constitute a negligible to minor, long-term, adverse impact.

With continuing visitor use of the islands' sandscapes and beaches, it is expected that the vegetative cover on some popular areas, such as the Raspberry and Ironwood sandspits, would continue to experience trampling, which in turn would increase the potential for wind and water erosion to affect the characteristics of some sandscapes (e.g., size, shape). Erosion due to people climbing up and down lake banks also would continue at island campsites near the shoreline. Thus, visitor use in alternative 3 would likely have the same effect on the park's sandscapes over time as visitor use in alternative 1: visitor use impacts would vary, depending on the level of use and environmental conditions, but could range

from minor to moderate, and be long term and adverse.

As in alternative 1, some existing docks would continue to affect coastal processes, altering the transport of sediments along the shoreline, resulting in minor to moderate, long-term, adverse impacts in localized areas. However, the Michigan Island dock and possibly several other docks on the former use and occupancy/life estates might be rehabilitated and improved in alternative 3. As noted in the mitigative measures in chapter 3, these improvements would not occur until studies of longshore sand transport have been completed. Although it is not certain what would come out of these studies, for some docks the improvements could include measures to reduce the impact of the docks on the movement of sand along the coastline. With more sand available to replenish downstream areas, Lake Superior currents and waves would not be as likely to erode beaches as much as under alternative 1. Depending on the design and extent of the docks, and assuming the frequency and intensity of major storms does not substantially change, alternative 3 could have a long-term, localized, beneficial impact on a few of the park's sandscapes compared to alternative 1.

Cumulative Impacts. As noted above and in the "Affected Environment," coastal processes in the past have been altered in specific areas, such as the installation of the dock at Michigan Island. Climate change is expected to affect lake levels and thus would affect coastal processes, including sediment transport and the park's sandscapes and beaches. Because the changes due to climate change in the park are unpredictable, both in their timing (whether they occur within the timeframe of this plan or beyond) and in magnitude or intensity of the impact—the effects of climate change on coastal processes could range from minor to major in intensity. When the effects of the actions in alternative 3 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse

cumulative impact. But alternative 3 would add a very small increment when added to the potential effects of climate change.

Conclusion. Alternative 3 would have both adverse and beneficial effects on coastal processes. Visitors and existing docks would likely continue to affect the park's sandscapes and shorelines, resulting overall in a minor to moderate, long-term, adverse impact in localized areas of the islands. On the other hand, compared to alternative 1 the relocation of the Stockton Island – Presque Isle campground, and the rehabilitation of several docks would help reduce visitor and dock impacts on shorelines and sandscapes, resulting in a long-term, localized, beneficial impact. None of these impacts would be considered unacceptable, and none would result in an impairment of park resources and values. When the effects of climate change are added to the effects of alternative 3, there would be the potential for a long-term, minor to major, adverse cumulative impact on coastal processes—although the actions in alternative 3 would add a very small increment to this overall impact.

Surface Water Quality

Analysis. Like alternative 1, in alternative 3 visitors would continue to affect water quality in localized areas through swimming and bathing, the disposal of graywater, and trash. These activities can contribute to the degradation of water quality by increasing nutrient and bacteria levels, and other chemicals (e.g., petroleum-based products, sunscreen, soaps). Some sedimentation also would occur at unsurfaced landings in areas where visitors put in and take out their boats, and in areas where bank erosion is occurring due to visitors walking down steep slopes. Overall, visitor use in alternative 3 would likely have the same impact as in alternative 1: a negligible to minor, long-term, adverse impact to water quality in localized areas due to relatively low use levels and the dilution effect of Lake Superior.

Overall, the level of use of motorized boats would not be expected to substantially change in the park under alternative 3. Thus, pollution from motorized boats, including MTBE (methyl tertiary butyl ether), PAHs (polyaromatic hydrocarbons), BTEX (benzene, toluene, ethylbenzene, and xylene) and heavy metals such as copper, would be expected to result in about the same overall minor, long-term, adverse impacts to water as alternative 1. Also like alternative 1, there could be minor to moderate, long-term impacts on water quality in areas that receive greater use, such as Presque Isle Bay and Little Sand Bay.

Unlike alternative 1, in alternative 3 the Michigan Island dock and possibly several other docks would be rehabilitated. Depending on the nature and extent of the work there could be water quality impacts due to increased turbidity in adjacent waters. However, the application of mitigative measures should minimize potential impacts due to accidental spills. Any such impacts from the dock work would be negligible to minor and short term in duration.

Cumulative Impacts. Several sources of water pollution external to Apostle Islands National Lakeshore have affected, and are likely to continue affecting, the water quality of the park. When added to the water quality impacts of alternative 3 being considered (negligible to minor, long-term, adverse impacts), there could be a minor to major, long-term, adverse cumulative impact to the park's water quality, depending on the type and quantity of pollutants that enter park waters. However, the increment added by alternative 3 would be relatively small compared to the impact from pollutants being added from actions outside the park boundary.

Conclusion. Alternative 3 would have the same negligible to minor, long-term, adverse impacts in water quality due to visitor use as alternative 1. Negligible to minor, short-term, adverse impacts also would occur to water quality due to rehabilitation of docks in this

alternative. None of these impacts would be considered unacceptable, and the level of impact would not constitute an impairment of the park's resources and values. When the effects of alternative 3 are added to the effects of water pollution from sources outside of the park, there would be the potential for a minor to major, adverse cumulative effect on the park's water quality. However, the actions in alternative 3 would add only a small increment to the overall cumulative impact.

Wetlands

Analysis. As in alternative 1, some impacts would occur in wetlands due to people walking through the wetlands and trampling vegetation. But only a few people would be expected to walk into the wetlands over the course of a year, resulting in negligible short- and long-term adverse impacts.

Cumulative Impacts. Climate change will likely affect the park's wetlands, including their species composition and water levels. For example, if the frequency or intensity of storms change, park wetlands could be affected. Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park's wetlands could range from minor to major in intensity. When the effects of the actions in alternative 3 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact on wetlands. But alternative 3 would add a very small increment to the potential effects of climate change on wetlands.

Conclusion. Alternative 3 would result in negligible, short- and long-term, adverse impact impacts due to people occasionally walking through wetlands. The effects of alternative 3 would not result in unacceptable impacts or impairment of the park's resources and values. When the effects of this alternative are added to the potential effects of climate change, there could be a minor to major, long-term, adverse cumulative effect on the park's

wetlands, although the actions in alternative 3 would add a very small increment to the overall cumulative impact.

Floodplains

Analysis. No new developments or other actions would occur in the Sand River floodplain, on the mainland, under alternative 3., with the exception of the new trail that would terminate at Sand River. However, this trail would not affect floodplain functions. Visitors would trample and crush some vegetation if they leave the trail and wander on the floodplain. However, relatively few people would be expected to walk through the floodplains over the course of a year, resulting in negligible, short and long-term, adverse impacts to the floodplain.

Cumulative Impacts. No past, present, or foreseeable actions within or outside the park are expected to affect the Sand River floodplain. Thus, there would be no additive cumulative effects on the floodplain.

Conclusion. Alternative 3 would have the same effect as alternative 1 on the park's floodplains: a negligible, short- and long-term, adverse impact due to people walking in the Sand River floodplain. These impacts would not be considered unacceptable and the level of impact would not constitute an impairment of the park's resources and values. No cumulative impacts would occur as a result of this alternative.

Vegetation

Analysis. Some of the proposed developments in alternative 3, including the trailer pads for NPS housing and visitor kiosk at Little Sand Bay, and a new maintenance/ operations center and staff apartments, would likely occur in areas that have already been altered by past actions and developments, and thus would likely have a negligible to minor adverse effect on native vegetation. Clearing of vegetation that is encroaching on the light station clearings also would result in the loss of some native vegetation, which would have a negligible to minor, long-term, adverse impact

depending on how much vegetation was removed.

On the other hand, several new park facilities would involve clearing of native vegetation. The construction and use of new interpretive trails on selected islands, new group campsites on Sand and Basswood and new campsites on the mainland; the relocation of the Stockton Island – Presque Isle campground to Presque Isle; the development of a new ranger station at Meyers Beach; and the development of the new mainland trail from Little Sand Bay to Sand River would all result in the loss or alteration of vegetation in localized areas. In addition, the clearing of vegetation at light stations and on the Hansen farm site on Sand Island would result in the loss of some native vegetation. In total, about 22 acres of vegetation would likely be altered or lost by these new developments and actions in alternative 3. The adverse impact on native plants in the project areas would likely be moderate and long term, but from a parkwide perspective, the adverse impacts due to new developments would be minor to moderate, and long term.

The partial restoration of the Hansen farm cultural landscape also would likely entail the removal of some native vegetation and weeds from old fields. However, because this area has been disturbed and altered in the past, this action would have a minor, long-term, adverse impact on native vegetation populations in this localized area.

Under alternative 3, visitor use of Apostle Islands National Lakeshore would continue to affect the park's vegetation. As in alternative 1, some vegetation would likely be lost due to the formation of user-created trails in popular areas such as campsites and picnic areas. Vegetation along the Lake Superior shoreline would continue to be trampled and damaged in places when visitors walk up and down the shoreline. Some plants would also probably continue to be lost through visitors walking on sensitive vegetation on sandscapes. Some existing designated campsites probably would expand in area over time, and user-created

campsites would continue to be established or expanded on islands, resulting in changes to and loss of vegetation in localized areas. If an area becomes cleared of vegetation due to the creation of a campsite(s), and if there were trees behind the cleared area and the beach, the trees would be more likely to be subject to blowdown. On the other hand, continued monitoring and the establishment of formal user capacity indicators and standards would assist managers in taking action before campsite conditions become unacceptable, which would have a long-term, beneficial effect. Weighing both the adverse and beneficial effects, visitor use under alternative 3 would be expected to have a long-term, minor, adverse impact on the park's native vegetation in localized areas.

As noted in the "Affected Environment" there has been a serious problem in the park with the introduction of nonnative species at past construction sites. It is likely that some nonnative species would be introduced through construction projects in this alternative. In addition, under alternative 3, some nonnative plants could be introduced or spread by visitors at picnic areas and campsites, in spite of education efforts. The potential for the spread of nonnative species would increase with the extension of the mainland lakeshore trail and any new developments. Although it is difficult to determine the impact on native species due to the uncertainties about the type of species that might be introduced in the future, and the locations and frequencies of introductions, it is likely that new introductions would occur. Even with monitoring and weed control efforts, the adverse effect of these impacts would be unknown, but could range from minor to major and be long term in duration.

Alternative 3 would have several beneficial impacts for native vegetation. The removal and restoration of the Stockton Island campground site and the restoration of the Oak Island group campsite would have beneficial impacts. Providing a ranger station at Meyers Beach and staff housing on Long Island would provide an increased NPS

presence in these areas, which would aid in monitoring and taking action to address vegetation impacts due to visitors. Taken together, these actions would have a long-term, beneficial impact on the park's vegetation in localized areas.

Cumulative Impacts. Several potential actions, independent of this plan, could affect the park's vegetation. As described in the "Affected Environment" chapter much of the park's vegetation has been substantially altered by past human activities, including logging and fires, farming, the building of cabins, quarrying, and the development of roads and fish camps. The impacts of these past actions far outweigh the impacts of the actions being proposed in the alternatives in this plan.

In the future developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the loss and modification of vegetation in these areas. This would have a long-term, minor, adverse impact on natural vegetation in the vicinity of the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect vegetation in the area, which would add a minor, long-term, adverse incremental effect to the effects of alternative 2.

Nonnative species have been spreading in different locations in the park, such as Meyers Beach, due to past construction activities, visitor activities, and natural sources like wind and birds. Independent of the actions in the alternative, the spread of nonnative species is likely to continue in the future. From a parkwide perspective, this has resulted in a minor to major, long-term, adverse cumulative impact on the park's vegetation, depending on the species.

As noted in the "Affected Environment" chapter, deer are spreading from the mainland to the islands in increasing numbers. Increasing numbers of deer would browse the

islands' native vegetation, reducing or eliminating such species as Canada yew, which could have a moderate to major, long-term, adverse impact on some native vegetation on the islands.

Climate change likely has affected and will continue to affect the park's vegetation, including species composition and population numbers. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the potential for wildfires and the spread of and seasons for insects, which in turn would have a minor to major, long-term, adverse impact on the park's native vegetation.

When the effects of all of these past and future actions are added to the adverse and beneficial effects of alternative 3, there would be a major, long-term, adverse, cumulative effect on the park's vegetation. However, the effects of alternative 3 would add a very small increment to the overall cumulative impact.

Conclusion. Alternative 3 would result in both beneficial and adverse impacts to the park's vegetation in localized areas. Taken together, restoration actions, the application of user capacity indicators and standards, and increased NPS presence on Long Island and Meyers Beach would have a long-term, beneficial impact. Minor to moderate, long-term, adverse impacts would occur due to the development of new facilities, and increased visitor use on some islands. The potential for the introduction and spread of nonnative invasive species in the park could increase, relative to alternative 1, resulting in an unknown impact on native vegetation. However, overall, most of the park's vegetation would not be affected by the actions in alternative 3 (with the possible exception of the impact of nonnative species). None of the impacts would likely affect the integrity, distribution, or presence of native plant communities in Apostle Islands National Lakeshore.

None of the vegetation impacts under alternative 3 would be considered unacceptable or sufficient to result in an impairment of Apostle Islands National Lakeshore's resources and values. There would be the potential for a major, long-term, adverse cumulative impact on the park's natural vegetation when the effects of past, present and future actions within and outside the park are added to the effects of alternative 3. But the increment added by alternative 3 to the overall cumulative impact would be very small.

Wildlife

Analysis. Some of the new developments in alternative 3 would occur in areas that have relatively natural vegetation, where people have not been present very often. These areas include new trails on selected islands, new group campsites on Sand and Basswood islands, new campsites on the mainland, the new Meyers Beach ranger station, the new mainland trail from Little Sand Bay. An additional action that could affect wildlife is the relocation of the Stockton Island – Presque Isle campground to Presque Isle. These new developments and actions would result in a loss or alteration of approximately 22 acres of wildlife habitat, with some wildlife, such as forest birds and mammals (e.g., voles, squirrels, hares) being displaced from the areas. The construction of the mainland trail also would be another source of fragmentation of wildlife habitat. Noise generated from the construction activities and from visitor use of the new facilities could potentially result in a larger area being subject to wildlife disturbance and displacement. Although construction activities would result in short-term impacts on wildlife, use of the facilities would result in long-term effects. As a result of all the proposed developments and actions, there would likely be minor to moderate, long-term, adverse impacts on wildlife populations in localized areas. Other new developments, including the new trailer pads and visitor kiosk at Little Sand Bay, and the new maintenance/operations facility and staff apartments, would probably be built in

areas that have already been altered by past actions and developments and already have people present. Wildlife remaining in these areas have adapted to these conditions, but wildlife are still being affected. Courtship, territory establishment, intra-species communication, predation and predator avoidance, and effective use of habitat could already have been affected by noise in these areas. That said, it is expected that any adverse impacts to wildlife due to the above projects during the construction period would be negligible and short term.

Impacts due to visitor use in alternative 3 would be about the same as those described under alternative 1. Wildlife populations, habitats, and behaviors already have been altered by people in popular areas of the park; these alterations would continue under this alternative. Human use of the park would continue to be primarily concentrated in areas such as the light stations, the islands' shorelines, and at campsites in alternative 3. Animals sensitive to human activities already avoid these areas when people are present. Wildlife that occupy these areas, such as red squirrels, hares, mice, and white-tailed deer, are mostly adapted to the presence of people. As in alternative 1, some animals would continue to occasionally be injured or killed by motor vehicles on roads in the mainland unit. Some animals, such as mice, blue jays, bears, sea gulls, and red squirrels, also probably would continue to be attracted by visitors feeding them or to areas where food and garbage are left out. The continuation of hunting and trapping would not be expected to adversely affect the park's populations, assuming that harvests stay at about existing levels and there was careful monitoring and enforcement of the state's regulations by the state of Wisconsin and the park staff. Taken altogether, visitor use in this alternative would be expected to have a minor, long-term, adverse impact on the park's wildlife populations.

Alternative 3 would have several beneficial impacts on wildlife. With the relocation of the Stockton Island – Presque Isle campground to

Presque Isle, away from key bear habitat, the potential for bear-human conflicts would decline compared to alternative 1. Thus, it is likely in the future that fewer problem bears would need conditioning to avoid humans in alternative 3, resulting in a long-term, beneficial impact. In addition, under alternative 3 the restoration of the Oak Island group campsite would increase wildlife habitat, resulting in a long-term, beneficial impact. Clustering some campsites in the wilderness area would decrease habitat fragmentation and would concentrate people in fewer areas, which in turn would reduce direct human-wildlife interactions, resulting in a long-term, beneficial impact. Finally, providing a ranger station at Meyers Beach and staff housing on Long Island would provide a long-term NPS presence in these areas, which would aid in monitoring and taking action to address wildlife impacts due to visitors.

Cumulative Impacts. Like vegetation, several potential actions, independent of this plan, could affect the park's wildlife. As described in the "Affected Environment," the loss of and/or changes in vegetation have affected the habitat for wildlife in the park (e.g., the spread of deer). Hunting also has affected wildlife in the past and present.

In the future developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the displacement of some wildlife and the loss and modification of wildlife habitat in these areas. In addition, noise generated by human activities in the vicinity of the islands, such as that generated by the use of motorized watercraft, could also disturb or displace some wildlife, particularly if these uses were to increase. These actions would likely have a long-term, minor, adverse impact on wildlife populations in the vicinity of the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect wildlife in the area, displacing some animals, which would add a minor, long-term, adverse

incremental effect to the effects of alternative 3.

Climate change will also likely affect wildlife composition of the park. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the spread of and seasons for insects, which could benefit some wildlife species and adversely affect other species. (See the "Affected Environment" chapter for more information.) Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park's wildlife could range from minor to major in intensity. When the effects of the actions in alternative 3 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse cumulative impact on the park's wildlife populations. But alternative 3 would add a very small increment to the potential effects of climate change on wildlife.

Conclusion. Alternative 3 would result in both adverse and beneficial impacts to wildlife in localized areas. Most wildlife in the park would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species. New developments on the islands and the mainland would result in the loss of wildlife habitat, resulting in a minor to moderate, long-term, adverse impact. Minor, long-term, adverse wildlife impacts also would occur due to visitation in the park. On the other hand, alternative 3 would result in long-term, beneficial impacts due to habitat restoration efforts, increased NPS presence at Meyers Beach and Long Island, and the relocation of the Stockton Island – Presque Isle campground out of key bear habitat. There would be the potential for a minor to major, long-term, adverse cumulative impact on the park's wildlife when the effects of alternative 3 are added to the potential effects

of climate change. But the increment added by alternative 3 to the overall cumulative impact would be very small. None of the wildlife impacts resulting from alternative 3 would be considered unacceptable or constitute an impairment of the park's resources and values.

Federal and State Threatened and Endangered Species

Analysis. No new actions or developments would occur on Long Island or the Michigan Island sandspit under alternative 3 that would affect the federal and state endangered piping plovers in the park. As in alternative 1, visitors and their dogs could disturb plovers. But in alternative 3 providing NPS housing at the Long Island light station would enable NPS staff to more effectively monitor the plover nests and reduce the potential for visitor disturbance. In addition, with continued efforts to protect nesting birds, including visitor education efforts and temporary closures around nesting areas, it is less likely that visitors would deliberately or accidentally disturb the plovers. If impacts from visitors were identified in the future, the park staff would consult with the U.S. Fish and Wildlife Service to identify and implement additional appropriate mitigative measures. Consequently, under alternative 3 visitors might affect, but would not likely adversely affect, piping plovers in the park.

Neither the changes in visitor use nor the new facilities in alternative 3 would be expected to affect use of the park by wolves. Although a few facilities would be built in the mainland unit and on a couple of islands, most are in areas already used by people and should not affect use of the park by wolves or their prey populations. As noted in the "Affected Environment," the park is a very small part of the range and is not often used by wolves. The winter is the most likely time wolves would be in the park, when visitor numbers are low. As in alternative 1, use levels may increase in the future and it is possible, albeit unlikely, that some visitors might see a wolf in the mainland unit and affect its behavior. But this would not be expected to stop wolves from coming into

the area or change their numbers, distribution, or use of the park. Any adverse impacts that would occur would be negligible and long term due to the potential for infrequent encounters to occur over the life of the plan.

Cumulative Impacts. As described in the piping plover recovery plan, increasing habitat loss, recreational pressure, predation, and contaminants are likely responsible for continuing population declines of the piping plover throughout its range (USFWS 2003). Outside of the park, habitat loss and modification has historically affected the Great Lakes region, although this impact is now thought to be occurring at a much reduced level (J. Trick, biologist, U.S. Fish and Wildlife Service, pers. com., 10-22-2008). Predation and disease, the use of motorized vehicles on beaches, recreational activities on beaches (e.g., beach walking, bike riding) likely will continue to affect the birds. Contaminants, pollution, and noise from human activities within and outside the park also may be affecting the species, although this is unknown. Although actions are being taken to protect piping plovers and their species, such as controlling human access to nesting areas and educating the public, the species is likely to continue to be imperiled during the life of this plan.

Independent of the alternative, park staff would continue to monitor and protect all piping plover nest sites.

As noted above, alternative 3 would have a beneficial effect on the protection of piping plovers on Long Island. When this beneficial impact is added to the effects of actions occurring outside the park, there would be an overall long-term, adverse cumulative impact. However, the effect of alternative 3 on the overall cumulative impact would be a very small beneficial increment.

Wolves have been increasing in Wisconsin, and no known developments or actions are expected to substantially affect the wolf population, habitat, and prey on the Bayfield Peninsula. Although it is possible that the wolf

may be delisted as a federally endangered species in the future, which may result in the removal of some wolves in the state, this would not be expected to affect the overall wolf population in the region of the park. Adding the negligible effects of alternative 3 to the other past, present, and foreseeable events in the area would not result in a cumulative impact to the wolf population.

Conclusion. Alternative 3 would have the same effect on piping plovers as the other action alternatives. No new developments or actions would occur on the beaches under alternative 3 that would have the potential to affect the piping plover in the park. Visitor use on island beaches would continue to have the potential to disturb the plovers, but with an increased NPS presence on Long Island and the continuation of other protection measures, impacts would be expected to be negligible. Thus, alternative 3 may affect, but would not likely adversely affect, the park's piping plovers. This alternative would not result in impacts that would be considered unacceptable or result in an impairment of the park's resources and values. The effect of alternative 3 added to the effects of other past, present, and foreseeable future actions occurring outside the park would result in a long-term, adverse, cumulative impact, although the increment added by the alternative would be beneficial and very small.

Alternative 3 would also have the same effects on the wolf population as the other action alternatives. The new developments, management actions, and changes in visitor use as a result of alternative 3 would not affect the area's overall wolf population and habitat. As in all of the alternatives, rare encounters of wolves and visitors may have a negligible adverse impact on a few wolves in the area, but this would not affect the overall population. Thus, alternative 3 may affect, but would not be likely to adversely affect, the park's wolf population. No cumulative impacts would occur, nor unacceptable impacts, nor impacts that would result in an impairment of the park's resources and values.

Natural Soundscape

Analysis. In alternative 3 noise would result from the construction and use of several new developments, including new campsites, trails, a new ranger station at Meyers Beach, trailer pads, and a new maintenance/operations facility and staff apartments. In some areas the noise from construction equipment (e.g., chainsaws) would be minor to moderate, but it would be temporary and localized, and would occur at different times and places in the park. In areas where there are other people and facilities, such as Meyers Beach, Bayfield, and Little Sand Bay, the impact of this noise would be less than in areas where there are relatively few or no people, such as the area of development of the new mainland trail from Little Sand Bay to Sand River.

As in alternative 1, noise from NPS maintenance and management activities, such as trail maintenance, grass mowing, pumping of vault toilets, and restoration activities, would continue to be heard occasionally on the park's islands. Most noise from these activities would be in or near developed areas that are already exposed to noise from vehicles, motors, and visitors. Overall, noise from ongoing maintenance and restoration activities would have a minor to moderate adverse impact on the natural soundscape in local areas, depending upon the activity, presence of other facilities and people, vegetation, and wind. The impacts would be of short duration, but because they would occur over the life of the plan, the impact would be long term.

During much of the year, particularly the winter, there would be few human-generated noises because there would be few people present. But during the peak use season there would be moderate levels of noise due to visitors and motorboats stopping at the islands. Noise levels would be most noticeable primarily in developed areas and popular use areas, such as the light stations, anchorages or docks at Rocky, South Twin, Raspberry, Oak and Sand islands, the Stockton Island Visitor Center, Little Sand Bay, and Meyers Beach.

Depending on winter conditions, noise levels would also likely be moderate at times at Meyers Beach with visitors going out to see the ice caves. These impacts would be brief, but would increase in intensity and duration during holidays and weekends when high numbers of visitors are present. Summer noise from regular concessioner island cruises to Raspberry, Stockton, and Oak islands also would continue, with large groups of people disembarking on Raspberry and Stockton islands. Because visitor use levels under alternative 3 would be about the same as under alternative 1, the impacts of visitor generated noise in the two alternatives would be about the same—the proposed actions would result in long-term, minor to moderate, adverse noise impacts in local areas on the mainland and most islands throughout Apostle Islands National Lakeshore.

Cumulative Impacts. Noise from outside the park has affected the park’s soundscape in the past and will continue to do so in the future. As described in the “Affected Environment” chapter, depending on location and wind direction, common human-caused sounds include engines from watercraft passing near the park, vehicles on roads on the mainland, sounds from logging operations, and urban sounds from Bayfield would continue to be heard in the park. Noise from the concession boat would continue to be heard not just at the islands it visits, but also on the islands it passes by. In the winter, noise from snowmobiles passing by the park would continue to be heard.

It is possible in the future that events like the speedboat “poker run” and other unregulated activities may occur just outside the park boundary, generating substantial noise. In addition, developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in noise during and after the construction period in these areas.

These adverse noise impacts would be minor to moderate (depending upon the type of

noise and location), intermittent, and long term—occurring every year.

When these impacts are added to the continuing impacts of alternative 3 there would be the potential for a long-term, minor to moderate, adverse cumulative impact on the natural soundscape. However, these cumulative impacts would primarily occur at certain times in the summer, such as weekends. The actions in alternative 3 would add a very small increment to the overall cumulative impact.

Conclusion. Under alternative 3 most of the park would remain relatively quiet, with few human-generated noises affecting the natural soundscape. Alternative 3 would result in short- and long-term, minor to moderate, adverse impacts due to the construction and use of new facilities on the islands and mainland. Minor to moderate, adverse noise impacts also would occur in local areas on the mainland and most islands, particularly in developed areas, due to visitor use and NPS maintenance and management activities. None of these noise impacts, however, would be unacceptable or be of a magnitude that would result in an impairment of the park’s resources and values. There would be the potential for a long-term, minor to moderate, adverse cumulative impact to the soundscape when the noise resulting from implementing this alternative is added to noise from activities outside of the park. However, the increment added by alternative 3 to the overall impact would be very small.

WILDERNESS CHARACTER

Analysis. No major changes in management would occur in the Gaylord Nelson Wilderness in alternative 3—the area would continue to be managed largely as it is now.

The vast majority of wilderness would remain untrammled in alternative 3. Activities that are nonconforming but allowed, such as wildfire suppression, nonnative species control, and environmental restoration,

would occur in localized areas and have a trammeling effect. Since these activities would most likely continue at the same level as in the no-action alternative, there would be no new impact from alternative 3.

As in alternative 1, most of the wilderness area would be expected to receive very low use levels. Although island use levels might slightly increase over time, it is expected that most of these visitors would stay in popular use areas and not venture into the wilderness. There would continue to be a few places in the wilderness area where relatively large groups of people (10-30+) may gather at one time, particularly on weekends and holidays. These areas would include the beaches at the southeast side of Raspberry Island and on the north side of York Island. In these areas opportunities for solitude would be diminished.

No new developments would occur in the wilderness area, although some campsites may be reconfigured and clustered. As in all of the alternatives, a few areas of the wilderness would show evidence of people, including hiking trails, campsites, and some historic structures, as well as occasional user-created trails and trampled vegetation/bare ground from informal campsites. Nevertheless, most visitors in this alternative would continue to find what they perceive to be natural conditions in most of the wilderness area—visitors would continue to find a forested landscape generally appearing untrammelled by people, with few obvious signs of disturbance or alteration.

Clustering campsites in the wilderness area would reduce opportunities for solitude for some campers, which would have a minor, long-term, adverse impact. On the other hand, relocating the Oak Island group campsite out of the wilderness area would increase opportunities for solitude in this area, resulting in a minor, long-term, beneficial impact.

The removal of the Oak Island group campsite from the wilderness area and the restoration

of the site would make this area once again appear more natural. This action would have a long-term, minor, beneficial effect on the apparent naturalness of the area.

Implementation of alternative 3 would not alter opportunities for primitive recreation in the wilderness area. Opportunities for primitive, unconfined recreation would continue to be present on most of the islands in the wilderness area. Day-use visitors would have complete freedom to go wherever they pleased, except for the small number of areas that are closed for resource protection purposes (e.g., Gull and Eagle Islands). For visitor safety and resource concerns, permits for overnight camping at designated campsites and for zoned camping would continue to be required. The permit system would ensure that overcrowding of campers does not occur in the wilderness. Although most visitors would likely agree that there would be outstanding opportunities for primitive, unconfined recreation on the islands, permit and camping requirements would continue to slightly diminish these qualities, resulting in a minor, long-term, adverse impact. It is possible that the implementation of user capacity indicators and standards could result in additional restrictions on visitor use if standards were exceeded, but it is not possible to speculate what actions, if any would be taken—and obtrusive use restrictions would only be taken as a last resort, if no other actions could correct the problem.

Cumulative Impacts. Actions independent of alternative 3 have affected, and would likely continue to affect the wilderness character of the park. Noise generated from human activities outside of the park, such as that generated by the use of motorized boats, would continue to affect some visitors' perceptions of solitude, resulting in a long-term, minor adverse impact to wilderness character. As noted in the impact topics above, the spread of nonnative species and climate change have affected, and are likely to continue adversely affecting the park's biological communities—including the wilderness area—resulting in a long-term,

minor to moderate, adverse impact to wilderness character (i.e., adverse effect on apparent naturalness of the wilderness areas). On the other hand, NPS staff have worked to restore disturbed areas in wilderness and likely will continue to do so in the future. This would have a minor, long-term, beneficial impact on wilderness character.

When all of the above actions are added to the impacts in alternative 3, there would be the potential for a minor to moderate, long-term, adverse cumulative impact on the wilderness character. However, alternative 3 would add a very small increment to the overall cumulative impact.

Conclusion. Alternative 3 would have the same effects on wilderness character as alternative 2. Overall, alternative 3 would have a minor, long-term, beneficial impact compared to alternative 1. As in all of the alternatives being considered, in alternative 3 visitors would be able to find in most of the wilderness area outstanding opportunities for solitude and primitive, unconfined recreation in what most people perceive to be a natural landscape. The relocation of the Oak Island group campsite out of the wilderness area would have a long-term, minor, beneficial impact on opportunities for solitude and apparent naturalness in this area. On the other hand, alternative 3 would result in the same minor, long-term, adverse impact to the area's wilderness character as alternative 1, due to the continuing requirement to obtain a permit to camp in the wilderness. Clustering campsites also would have a minor, long-term, adverse impact, due to some visitors perceiving a loss of solitude. No changes would occur with regard to the untrammelled character of the wilderness area.

None of these impacts to wilderness character would be considered unacceptable. When the effects of actions occurring independent of the alternative are added to the effects of alternative 3 there would be the potential for a minor to moderate, adverse, cumulative effect on wilderness character—albeit alternative 3

would add a very small increment to this overall cumulative impact.

CULTURAL RESOURCES

Historic Structures / Cultural Landscapes

Light Stations

Under alternative 3, the Raspberry Island light station would remain the primary focus of preservation treatments and visitor use opportunities because of its relative accessibility and renown as a “showplace” property. Rehabilitation and restoration of the light tower and attached keeper's quarters were undertaken in 2006 to address structural deterioration, enhance visitor interpretation, and provide for NPS seasonal employee housing. As funding permits, rehabilitation and restoration of the Raspberry Island light station's cultural landscape would also be carried out in accordance with recommendations from the 2004 cultural landscape report, and the *Secretary of the Interior's Standards for the Treatment of Historic Properties (with Guidelines for the Treatment of Cultural Landscapes)*. Implementation of these measures would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the Raspberry Island light station.

The park staff would stabilize and preserve the other historic light stations in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. With particular regard to the standards and guidelines for preservation, the existing form, features, and architectural detailing of the light station buildings and structures would be retained. Preservation maintenance of character-defining features (with primary focus on building exteriors) would be emphasized over replacement of historic fabric. Stabilization measures would be carried out to structurally reinforce, weatherize, and correct unsafe conditions. As needed, shoreline stabilization would also be undertaken (such as that completed for the Raspberry Island and Outer Island light

stations) to control erosion of the shoreline embankments that has threatened the historic structures. Implementation of these preservation and stabilization measures would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the historic light stations.

Rehabilitation measures would be carried out at the Raspberry Island and Long Island light stations to provide for NPS staff use and housing. In accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (with particular attention to the standards and guidelines for rehabilitation), historic building materials and character-defining features would be protected and maintained to the extent possible, although extensively deteriorated, damaged, or missing features would be replaced with traditional or substitute materials. Possible alterations and additions may be appropriate to permit efficient contemporary uses of the structures and buildings. However, no public or staff overnight use would occur at the other light stations, and consequently there would be no need for interior rehabilitation of these structures. Rehabilitation of selected light stations carried out in accordance with the *Secretary's Standards* would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on these historic properties.

Although the primary focus of cultural landscape restoration and rehabilitation would be reserved for the Raspberry Island light station, the cultural landscapes of other light stations would be preserved and stabilized to maintain the integrity of landscape features identified as contributing to site significance. Historic views may be obscured in some instances by trees and other vegetation encroaching into the larger surrounding areas historically reserved for the light stations. However, preservation of cultural landscape elements associated with the light stations would have long-term negligible to minor adverse impacts as well as

long-term beneficial impacts on the historic properties.

Other Historic Structures and Cultural Landscapes

National register-listed or national register-eligible structures associated with historic farmsteads, tourism/recreational sites, fishing and logging camps, etc. would be preserved and stabilized in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Contributing cultural landscape features associated with these sites also would be preserved and stabilized. The historic Hokenson fishery on the mainland at Little Sand Bay may be considered in future planning for rehabilitation and adaptive use as a visitor center or contact facility. These actions would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on historic properties.

For selected historic properties currently under use and occupancy leases or life estates (i.e., the former fishing settlement and later resort on Rocky Island, the West Bay Club on Sand Island, and Shaw Point / Camp Stella on Sand Island), the park staff would undertake various preservation treatments and adaptive uses once leases have expired and/or private occupancy has ceased. Historic structures would be preserved at the Rocky Island settlement, and one or more docks may be rehabilitated. The West Bay Club lodge would be preserved and the dock rehabilitated for public day use. At Shaw Point, docks would be rehabilitated for public day use and contributing Camp Stella historic structures would be preserved and interpreted. Contributing structures at the Hansen farm would be stabilized and preserved, and its cultural landscape would be partially restored. Implementation of these actions in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on these historic properties

Cumulative Impacts. Historic buildings, structures and cultural landscapes at the park are susceptible to severe weathering and storm damage from harsh climatic conditions. Forest vegetation encroaching near historic structures and sites also presents a risk of fire damage from increasing fuel loads. Park staff also face logistical challenges and the additional expenses associated with transporting materials and equipment by boat from the mainland to island docks, and subsequently from docks to worksites on the islands to carry out preservation activities. Consequently, preservation treatment of historic buildings, structures and cultural landscapes may not always occur in a timely manner and/or may be deferred in some instances. The integrity of these historic properties can be adversely affected if historic fabric deteriorates or is lost. However, in conformance with the *Secretary's Standards* and as funding permits, the national lakeshore continues to carry out stabilization and preservation of historic structures (e.g., reroofing, repointing, painting, structural reinforcement and other repairs) to arrest deterioration and to retain as much of the historic integrity of these structures as possible. These measures, in addition to more extensive preservation treatments such as the rehabilitation and restoration of the Raspberry Island light tower and keeper's quarters, have had long-term beneficial impacts.

The impacts associated with implementation of alternative 3 would have long-term negligible to minor adverse impacts and long-term beneficial impacts on the park's light stations, and other historic buildings, structures and cultural landscapes. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. Consequently, the impacts of the other actions described above, in combination with the adverse and beneficial impacts of alternative 3, would cumulatively result in long-term, negligible to minor, adverse impacts on these historic properties.

Conclusion. Implementation of actions proposed by alternative 3 would have long-term negligible to minor adverse impacts on the park's light stations and other historic structures and cultural landscapes listed in or eligible for listing in the National Register of Historic Places. Adverse impacts would result primarily from potential alterations, additions and/or replacement of historic fabric and other character-defining features determined necessary to preserve, restore, or rehabilitate historic structures and landscape elements. However, implementation of appropriate preservation, restoration, or rehabilitation treatments in accordance with the *Secretary's Standards* would also help ensure the long-term preservation of these historic properties—a beneficial impact. There would also be long-term negligible to minor adverse cumulative effects on these historic properties from implementation of alternative 3 in combination with other past, present, or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the national lakeshore or to opportunities for enjoyment of the national lakeshore, or (3) identified as a goal in the national lakeshore's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the national lakeshore's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 3 would result in no adverse effect on historic structures and cultural landscapes.

Archeological Resources

Under alternative 3, there would be little substantial change to park facilities or infrastructure, and to visitor use

opportunities. In nonwilderness areas, the Stockton Island – Presque Isle campground would be relocated to Presque Isle. Self-guided interpretive trails, an Ojibwe cultural demonstration site, and additional group campsites may be developed. In wilderness areas, some campsites and trails may be reconfigured or relocated. The Oak Island group campsite would be removed. New construction on the mainland unit would include additional trails, campsites, an NPS ranger station at Meyers Beach, and seasonal employee apartments.

Ground-disturbing construction activities associated with development proposals have the potential to impact archeological resources. In consultation with the Wisconsin state historic preservation office and affiliated tribal historic preservation offices, the Park Service would ensure that archeological assessments and surveys are carried out for all areas of potential effect proposed for development prior to construction. Known resources would be avoided to the greatest extent possible. If during construction previously undiscovered archeological resources were uncovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed through further consultation. Few, if any, adverse impacts would be anticipated.

NPS archeologists would continue to monitor the condition of known archeological sites, and would undertake appropriate protection and stabilization measures as necessary to reduce or avoid site impacts possibly occurring from natural erosion, visitor use, or other factors. NPS archeologists would also continue to carry out survey inventories and documentation of archeological resources in fulfillment of section 110 requirements of the National Historic Preservation Act. Continuation of archeological resource management actions under existing laws and policies would have long-term negligible to minor adverse impacts on archeological resources.

Cumulative Impacts. Archeological resources in the park (and throughout the region) are subject to a variety of disturbances associated with shoreline erosion and other natural erosion processes, high winds that can overturn trees and dislodge buried sites, ground-disturbing construction activities, inadvertent visitor use impacts, artifact looting, etc. These factors can contribute to adversely affect the integrity of archeological resources as the potential of impacted sites to yield important prehistoric or historic information is diminished and/or irretrievably lost. However, understanding of regional prehistory and history can also benefit as archeological information continues to be acquired through ongoing research and perhaps from data recovery investigations carried out in fulfillment of mitigation requirements.

The impacts associated with implementation of alternative 3 would have long-term negligible to minor adverse impacts on the park's archeological resources. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. Consequently, the beneficial and adverse impacts of the other actions described above, in combination with the impacts of alternative 3, would cumulatively result in long-term negligible to minor adverse impacts on archeological resources.

Conclusion. Implementation of actions proposed by alternative 3 would have long-term negligible to minor adverse impacts on the park's prehistoric and historic archeological resources listed in or eligible for listing in the National Register of Historic Places. There would also be long-term negligible to minor adverse cumulative impacts on archeological resources from implementation of alternative 3 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified

in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 3 would result in no adverse effect on archeological resources.

Ethnographic Resources

Under alternative 3, there would be little substantial changes to park facilities or infrastructure, or to visitor use opportunities. In nonwilderness areas, the Stockton Island – Presque Isle campground presently on the tombolo would be relocated to Presque Isle. Self-guided interpretive trails, an Ojibwe cultural demonstration site, and additional group campsites may be developed. In wilderness areas, some campsites and trails may be reconfigured or relocated. The Oak Island group campsite would be removed. New construction on the mainland unit would include additional trails, campsites, an NPS ranger station at Meyers Beach, and seasonal employee apartments. Although management information to identify the existence or location of ethnographic resources is limited at the park, ethnographic resources could potentially be impacted as a result of these ground-disturbing construction activities. Continuing consultations with the Ojibwe and other affiliated tribes to identify ethnographic resources would minimize the possibility that unknown sites could inadvertently be disturbed by visitor use or NPS activities. Long-term negligible to minor adverse impacts would be anticipated.

NPS staff would continue to collaborate with the Ojibwe and other affiliated tribes to identify and evaluate potential ethnographic

resources by conducting appropriate research and investigations (i.e., ethnographic overviews and assessments, traditional use studies, ethnographic landscape studies, oral histories, etc.). Identified ethnographic resources meeting the criteria for national register eligibility would be documented and managed as “traditional cultural properties.” An Ojibwe cultural demonstration site would provide an opportunity to educate visitors about Ojibwe cultural history and the importance of respecting and protecting ethnographic resources important to the Ojibwe and their traditional way of life. Efforts to identify, document and protect ethnographic resources would have long-term, beneficial impacts on these resources should they be found to exist in the park.

In consultation with affiliated tribes, the Park Service would continue to permit customary harvest and consumptive use of park resources, including hunting, fishing, and gathering plants and berries. These activities would be carried out in accordance with park purposes and NPS policies, with the provision that the activities do not to adversely affect park wildlife or the reproductive potential of plant species, or otherwise adversely affect park resources. Also in accordance with applicable laws and policies, the Park Service would permit tribal access to park areas for traditional religious, ceremonial, and other customary activities. In consultation with the tribes and consistent with tribal goals, the Park Service would protect sacred sites and other ethnographic resources should these be identified. Providing and protecting tribal access to traditional use areas in the park, and protection of customary hunting, fishing and gathering activities would have long-term, beneficial impacts on ethnographic resources.

Cumulative Impacts. Ethnographic resources at the park (and throughout the region) are subject to a variety of disturbances associated with erosion and other natural processes, ground-disturbing construction or development activities, inadvertent visitor use impacts, blocked access to traditional use areas, artifact looting, etc. In part because of

tribal concerns for retaining the confidentiality of ethnographic resources, land managers are occasionally challenged to provide adequate protection for these resources because of the limited information available regarding their potential existence, nature and location. These factors can contribute to adversely affect the integrity of ethnographic resources having particular significance to tribes and other cultural groups. However, ongoing research and information gathered from tribal consultations can provide long-term benefits by increasing understanding and appreciation for the protection of regional ethnographic resources.

The impacts associated with implementation of alternative 3 would have long-term negligible to minor adverse impacts on the park's ethnographic resources. Consequently, the beneficial and adverse impacts of the other actions described above, in combination with the impacts of alternative 3 would cumulatively result in long-term negligible to minor adverse impacts on ethnographic resources.

Conclusion. Implementation of the actions proposed by alternative 3 would have long-term negligible to minor adverse impacts on ethnographic resources at the park. Long-term negligible to minor adverse impacts on ethnographic resources would also occur from implementation of alternative 3 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 3 would result in no adverse effect on ethnographic resources.

VISITOR USE AND EXPERIENCE

Ability to Access the National Lakeshore, Including Universal Access

In alternative 3, the focus would be on providing primitive, lake-oriented recreation and education opportunities unique to the Apostle Islands. The existing transportation options to the islands would be maintained. Some of the docks associated with the former use and occupancy/current life estates would be rehabilitated for public day use. This alternative would maintain existing access to desired locations. Upon termination of the existing reservations and the completion of rehabilitation by the Park Service, access to Rocky Island and Sand Island also would be improved, resulting in a long-term, major, beneficial impact.

The existing facilities that are accessible to visitors with disabilities would be maintained, but no additional facilities would be added in this alternative. During interactions with park staff, people have expressed interest in having more facilities and programs that would support the needs of visitors with disabilities. This alternative would maintain the limited accessible facility and program opportunities on both the mainland and islands, continuing a long-term, minor, adverse impact for visitors.

Lake and Island Related Recreational Opportunities and Experiences

As noted, this alternative would focus on providing primitive, lake-oriented recreation and education opportunities. The emphasis on the primitive zone for most areas on the islands would promote these types of primitive, solitude seeking types of recreation

experiences. Existing lake and island recreational opportunities would continue to be available. Some new interpretation and education opportunities, such as interpretive trails and cultural demonstration areas, may be available in the future. These would provide additional island-based recreation opportunities, resulting in a long-term, minor, beneficial impact. Other new opportunities including an increase in group campsites, which was of particular interest to some members of the public, would have a long-term, minor, beneficial impact. The Oak Island group campsite would be removed due to its location in wilderness, resulting in a long-term, minor, adverse impact.

This alternative also includes the proposal to relocate most of the Stockton Island – Presque Isle campground to Presque Isle to mitigate existing resource impacts. This campground is popular for many repeat visitors, and the location of the campsites along the shoreline is considered highly desirable due to the great lake views and privacy between sites. This proposal might detract from the visitor experience for repeat visitors who enjoy staying at a particular site in the existing campground. However, the new sites on Presque Isle will likely have similar views, more amenities, and a more efficient and effective design, which will result in a higher quality campground, resulting in a long-term, moderate, beneficial impact on the visitor experience. During the construction of the new campground and the relocation of camping activities, there will be short-term, minor, adverse impacts to visitors due to noise, temporarily restricted access, and visual intrusions.

This alternative would promote and possibly increase the park's outstanding opportunities for solitude, quiet, "wildness," connection with nature, and first hand discovery of the islands' history. Opportunities for solitude, quiet, and connection with nature would be enhanced by several proposals in this alternative. First, all of the wilderness areas would be in the primitive zone that would direct the National Park Service to continue

protection of the values of natural quiet and solitude, and opportunities for visitor contemplation, naturalness, and primitive recreation. These are some of the most highly valued characteristics of the park, and the preservation of these values would have a long-term, major, beneficial impact. Further, the group campsite on Oak Island will be removed, minimizing potential impacts to the soundscape and perceptions of crowding in the designated wilderness area. This would have a long-term, minor, beneficial effect. There would be no net gain in campsite and trail opportunities in designated wilderness, but there is a possibility that some designated campsites and trails may be reconstructed and relocated to protect resources. For those visitors who enjoy camping at a particular wilderness campsite or hiking a specific trail, the potential relocation or realignment of these facilities may be perceived as a long-term, minor, adverse impact. In addition, these actions may result in a short-term, minor, adverse impact during the relocation and construction of new sites and trails.

Although this alternative includes high levels of protection for the qualities of solitude and primitive recreation, the visitor access to some of the former use and occupancy/current life estates may increase the potential for crowding and noise impacts on adjacent areas, resulting in a long-term, negligible, adverse impact.

To help mitigate these concerns, this alternative includes the institution of the user capacity indicators and standards to guide long-term visitor use management in the park. The park would monitor several indicators related to visitor experience and resource impacts that identify if and when additional management strategies are needed to achieve desired conditions. The park would take all actions necessary to ensure that these indicators stay within a given standard to protect the highly valued opportunities for solitude in the park. The inclusion of these types of indicators in the park's monitoring program would create a long-term, moderate, beneficial impact. Specific actions to achieve

the standards identified in this management plan would be evaluated under the requirements of the National Environmental Policy Act, the National Historic Preservation Act, and other applicable laws and policies.

Mainland Recreational Opportunities and Experiences

In this alternative, the mainland would be primarily zoned backcountry, except for Little Sand Bay and Meyers Beach that will be zoned with the frontcountry zone. This would direct the National Park Service to promote outstanding opportunities to enjoy natural resources and solitude in the backcountry zone and convenient and easy access to developed, high use, recreational and interpretive areas in the two areas zoned with the frontcountry zone. This zoning pattern would continue to promote concentration of high use and educational opportunities in the existing developed areas, while promoting values of nature based recreation and contemplation in other areas of the mainland. This supports much of the desired conditions heard from the public during scoping and would provide a long-term, moderate, beneficial impact to recreation opportunities on the mainland.

This alternative also includes specific strategies to improve the high-quality mainland recreational opportunities. Water trails and water access campsites are all proposed in this alternative to increase the diversity of opportunities that are nature based and focus on the lake and islands. A large number of visitors to the park only visit the mainland, so these new opportunities would allow visitors to experience the lake and gain views of the islands, enhancing the visitor experience of the park from the mainland. These new opportunities on the mainland would result in a long-term, moderate, beneficial impact. However, these new opportunities may bring higher volumes of use that could cause additional crowding during peak use times especially at attraction points such as Meyers Beach, resulting in a long-term, minor, adverse effect.

Opportunities to Understand the Significant Stories of The Apostle Islands

In this alternative, the visitor center in the historic courthouse in the City of Bayfield would be expanded at its current location. This facility will include updated and expanded exhibit areas and stations for visitor contact with NPS staff and volunteers. This would improve the ability of visitors to get high-quality interpretation, orientation, and information, increasing their understanding of the significant stories and resources of the park. Further, the historic building is very important to the gateway community and has an excellent auditorium. However, as noted in the discussion of the no-action alternative, the location of the visitor center is outside of the immediate transportation routes through town, relatively far from the departure location of the concession cruise boat, and outside of the viewshed for the islands or Lake Superior. Thus the improvements to the visitor center at the existing location would result in a long-term, minor, beneficial impact.

In addition, this alternative includes the replacement of the Little Sand Bay Visitor Center with an unstaffed kiosk. The current Little Sand Bay Visitor Center is in poor condition and has very limited space for exhibits. An unstaffed kiosk would provide orientation information, but very little interpretive information and no NPS contact opportunities for visitors. Visitors who only stop at Little Sand Bay will likely miss out on a full understanding of the significant stories of the Apostle Islands, unless they participate in a programmed tour of the Hokenson House. This proposed action for the visitor center at Little Sand Bay would result in a long-term, minor, adverse impact. This alternative would not include any changes to the Stockton Island Visitor Center or the Northern Great Lakes Visitor Center.

In this alternative, it is likely that the need for nonpersonal services, such as bulletin boards and wayside exhibits, trail signs, and park brochures will remain relatively the same as the need for nonpersonal services identified in

the no-action alternative. However, new opportunities for personal services on the mainland that would focus on the Hokenson Brothers Fishery, the more broad history of Great Lakes' Fishery, and the Native American presence in the area would increase opportunities for visitors to understand the significant stories of the Apostle Islands. These new programs would be accessible to many visitors, and would more fully reflect the park's major interpretive themes, resulting in a long-term, moderate, beneficial impact. Further, this alternative includes new interpretation and education opportunities on the islands, such as interpretive trails and cultural demonstration areas. These new opportunities may be less accessible to the majority of visitors, but would still result in a long-term, minor, beneficial impact for visitors.

In this alternative, only minimal changes would be made to the park's significant cultural sites and resources. Specifically, this alternative states that no light stations, other than Raspberry Island Light station, would be rehabilitated for interpretation purposes. However, the cultural landscape of Raspberry Island Light station would be partially or fully restored. The exteriors of the other light stations would be stabilized, and nonpersonal services would provide interpretation. The cultural landscapes in immediate proximity to the other light stations would be stabilized. This alternative would reduce the amount of personal services that are currently provided, often by volunteers during peak season, at the other light stations. This change in the amount of the light stations that are attended during peak season would reduce some of the opportunities to learn about the stories associated with the light stations, creating a long-term, minor, adverse impact. The improvements to Raspberry Island's cultural landscape and the stabilization of the other cultural landscapes in immediate proximity to the light stations would result in a long-term, minor, beneficial impact to the opportunity for visitors to understand the significant stories of the Apostle Islands.

In this alternative, several of the former use and occupancy/current life estates would be available for limited visitor access, mostly to the exterior of the structures; some non-personal interpretation would also occur at these sites, as the opportunity presents itself. The historic roads would not be reestablished as trails. The increase in visitor access and interpretation opportunities would enhance visitors' exposure to and understanding of the human history on the islands in the park—resulting in a long-term, minor, beneficial impact.

Visitor Safety

This alternative includes a ranger station at Meyers Beach, which will increase the NPS presence at that site, improving visitor orientation and safety information dissemination, as well as improving response times to this area of the park. This will greatly improve visitor safety for a large number of visitors to the park—creating a long-term, moderate, beneficial impact.

Further, the expansion of the visitor center in Bayfield will likely increase the ability of the National Park Service to distribute safety information—resulting in a long-term, minor, beneficial impact. However, the replacement of the Little Sand Bay Visitor Center with an unstaffed kiosk may reduce the amount of safety information that is effectively disseminated to park visitors in this area of the park. The reduction in contacts with visitors could result in a long-term, minor, adverse impact on visitor safety.

The rehabilitation of the Long Island light station for NPS housing will increase the NPS presence on Long Island, improving interpretation and visitor safety. This would be considered to have a long-term, minor, beneficial impact.

This alternative also includes the proposal to relocate the Stockton Island – Presque Isle campground from the tombolo to Presque Isle, which will help reduce the interaction of visitors and bears on Stockton Island. This

will improve visitor safety on Stockton Island, creating a long-term, minor, beneficial impact.

Cumulative Effects. There are no actions or developments foreseen within or adjacent to the park that would likely affect visitor use and experience. There is the possibility of a slight increase in visitation or a change in visitor interests and demand due to potential changes in regional populations or national recreation trends. The likelihood of these changes is unknown at this time. If this were to occur, it may cause a slight increase in existing visitor use concerns such as crowding and conflicts at high use docks and attraction sites. Also, any significant effects from climate change could have a minor to major effect on visitor use and experiences. Of particular concern is the likely warmer water and longer seasons, punctuated by more severe and unpredictable storms, suggesting a long term adverse impact on visitor safety as more visitors are likely to be vulnerable to Lake Superior without adequate preparation. Other changes that could result in impacts include reduced access to infrastructure and alterations to wildlife watching and fishing opportunities as a result of habitat changes.

Conclusion. Alternative 3 would result in minor to moderate beneficial impacts due to slight improvements in access opportunities, continuation of existing lake and island recreational opportunities, and increased interpretive opportunities on the mainland. This alternative would promote and possibly increase the park's outstanding opportunities for solitude, quiet, "wildness," and connection with nature, which are highly valued characteristics by the public. This alternative also includes expansion of the visitor center in Bayfield and placement of a ranger station at Meyers Beach, which would improve visitor education, orientation and safety. However, this alternative only makes minimal changes to access and interpretation of significant cultural sites and actually reduces the amount of personal services currently provided at light stations, resulting in minor adverse impacts. Finally, any effects resulting from changes in population, recreational trends or climate

change may result in additional minor to major adverse effects, but the ability to predict the type or intensity of these impacts is limited at this time.

PARK OPERATIONS

Analysis. Like all of the alternatives, the park's physical geography would pose an operational challenge in alternative 3. Depending on the location of the new maintenance/operations center, fragmentation of park staff and facilities would either be reduced or exacerbated—without knowing the location of this new facility it is not possible to analyze this impact. However, building a new ranger station at Meyers Beach, and relocating some administrative staff from Little Sand Bay to Bayfield would improve the effectiveness and efficiency of park staff, and increase their productivity. Although the separation of the park headquarters from the maintenance facility would still separate staff, overall compared to alternative 1 the improvements in alternative 3 would result in a long-term, beneficial impact on park operations.

Unlike alternative 1, in alternative 3 several new actions and developments would occur, which would affect park operations. The construction of new facilities and trails (e.g., building a new trail at Little Sand Bay, moving the Stockton Island – Presque Isle campground to Presque Isle), and rehabilitation of existing facilities (e.g., expanding the Bayfield visitor center, rehabilitating the Manitou fish camp and Long Island light station) under this alternative would require additional resources for operations and maintenance and additional efforts from maintenance, interpretation and resource management staff (as well as more staff). On the other hand, under alternative 3, the Little Sand Bay Visitor Center would be replaced with an unstaffed kiosk, which would slightly lower the demands on park staff (including funding, equipment, supplies, etc.). Overall, assuming additional funding and staff are provided as

called for under the alternative, the additional facilities and actions in alternative 3 should have a minor, long-term, adverse effect on park operations.

With several additional employees the park staff would be able to better achieve desired conditions in program areas such as resource protection, visitor services, wilderness management, cyclic maintenance, and the deferred maintenance backlog would likely decrease. This would have a, long-term, beneficial impact on park operations.

Cumulative Impacts. No major new park projects and actions, independent of this plan, are expected over the life of this plan. Thus, no foreseeable actions would combine with the actions proposed in alternative 3 that would result in cumulative park operations impacts.

Conclusion. Compared to alternative 1, alternative 3 would have a long-term, beneficial effect on park operations, due primarily to actions taken to improve park operational facilities, decrease staff fragmentation, and increase staffing levels. On the other hand, new developments and management actions in alternative 3 would require additional time and resources to initiate and maintain, resulting in a minor, long-term, adverse effect on park operations. No cumulative impacts on park operations would be expected as a result of this alternative.

SOCIOECONOMIC ENVIRONMENT

Analysis. Alternative 3 would have several effects on the socioeconomic environment. Under this alternative there would be both increases in time visitors spending and increases in park expenditures. As noted in the alternative there would be a number of new opportunities on the islands for visitors (e.g., the development of campsites and interpretive trails on Sand, Oak and Basswood islands, a new mainland trail, more interpretive opportunities on the mainland).

As a result, more visitors would spend a longer time in the area. This would result in a long-term benefit to local businesses that provide services and goods to tourists, such as restaurants and other local merchants. The impact would be a long-term, beneficial impact to the socioeconomic environment.

As noted in the alternative description, the National Park Service would be spending additional funds on construction and maintenance of facilities. This would in turn have a long-term, beneficial impact on businesses that supply materials and services to the park, including local merchants, utilities, equipment suppliers, and contractors. Construction businesses would receive short-term benefits from the development of facilities in the alternative. (How much the local economy actually would benefit would depend upon the degree to which park needs can be fulfilled within and by local businesses.) Hiring additional park staff under the alternative would also result in these individuals spending their income for housing, food, entertainment, and other services and goods, which in turn would increase revenues for local businesses. In addition, local governments would collect more tax revenues as a result of both visitor spending and park spending in the area.

As in all of the alternatives, in alternative 3 the park would continue to be an important attraction for many residents and for people considering relocation to the region, although the alternative would not be expected to cause major changes in the regional population. There would be more demands on mainland community services (e.g., water and sewer systems, local law enforcement) with visitors spending more time in the area, compared to alternative 1, but levels would not be expected to increase to a level that would substantially change park-related demands on community services and facilities.

Cumulative Impacts. No ongoing or new park projects, independent of this plan, or other major changes on lands adjacent to the park (e.g., substantial changes in management

and land use of lands adjacent to the mainland unit) are expected over the life of this plan. In the future developments such as second homes may be built on some lands adjacent to the mainland unit. With increased revenues for construction businesses, and increased tax payments, this likely would have short- and long-term, beneficial impacts on the regional economy, depending on the nature and scope of the developments. When these impacts are added to the beneficial impacts of alternative 3, there could be a long-term, beneficial, cumulative impact to the socioeconomic environment.

Conclusion. Under alternative 3 there would likely be increased spending by visitors, with visitors spending more time in the area, increased spending by the park, and increased spending by new park employees. These changes, however, would be relatively small compared to the overall regional economy and would not be expected to change the character of the social and economic environment. Most of the benefits of the alternative would occur in the Bayfield area. Compared to the no-action alternative, alternative 3 would result in a long-term, beneficial impact. The effects of alternative 3, in combination with the potential beneficial socioeconomic impacts of future residential developments adjacent to portions of the mainland unit, could result in a long-term, beneficial cumulative impact to the socioeconomic environment.

UNAVOIDABLE ADVERSE IMPACTS

Under alternative 3, some soils and vegetation would be lost or altered due to construction of new facilities on the islands and mainland and due to visitor use in developed and high use areas. This would include bank erosion, and trampling of vegetation on sandscapes. Some docks would continue to alter coastal processes. Visitors and construction activities also may inadvertently contribute to the introduction and spread of nonnative species and to water pollution in localized areas.

There would be loss or alteration of some wildlife habitat (and wildlife in those areas) due to construction and use of new facilities, and increased visitor use in some areas may adversely affect wildlife in those areas. Short and long-term, adverse impacts to the natural soundscape would occur due to facility construction, visitor use, and NPS maintenance activities, primarily in high-use areas and during high-use periods (e.g., summer weekends). Clustering of campsites in the wilderness areas would adversely affect the wilderness character for some visitors (i.e., loss of solitude). Construction of some visitor facilities, such as the new campground on Presque Isle, would result in unavoidable impacts to visitors due to temporarily restricted access and visual intrusions. Some repeat visitors experience would be adversely affected by the relocation of the Stockton Island – Presque Isle campground to Presque Isle and the potential relocation or realignment of some wilderness campsites. Crowding and congestion at high use areas (e.g., docks) would occur during the summer, adversely affecting some visitors' experiences. Education, interpretation, and outreach efforts would help minimize, but not eliminate, the likelihood of the above impacts.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

New actions would be taken in alternative 3 that would result in the consumption of nonrenewable natural resources, and in the use of renewable resources that would preclude other uses for a period. In the construction of new facilities, including buildings and trails, limited amounts of nonrenewable resources would be used and there would be a loss of vegetative productivity and wildlife habitat for as long as these facilities remain. These resources would be essentially irretrievable once they were committed. In addition, because it takes so long for soils to form, the loss of soils due to the construction of new facilities, visitor use in localized areas, and erosion of soil in places within Apostle Islands National Lakeshore

would be an irreversible commitment of resources.

THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

As in all of the alternatives, the National Park Service would continue to manage the park to maintain ecological processes and native biological communities and to provide appropriate recreational opportunities consistent with preservation of cultural and natural resources. The vast majority of Apostle Islands National Lakeshore would continue to be protected in its current, relatively natural state and would maintain its

long-term productivity. The primary short-term uses of the park would continue to be recreational use. Under alternative 3 there would be expanded (but still relatively modest) development to support recreational use and park operations, resulting in some localized loss of ecological productivity. Adverse impacts on the area's soils, water quality, vegetation, and wildlife due to visitor use also could reduce the productivity of natural resources in localized areas over time, although overall no measurable effect on the park's long-term productivity would be expected. On the other hand, efforts to restore native vegetation would increase long-term productivity of the environment in localized areas.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE 4

NATURAL RESOURCES

Soils

Analysis. Several new park facilities would be built under alternative 4 that would involve ground disturbance and consequently impacts to soil. The construction and use of new trails on selected islands, a new day use area at Little Sand Bay and on one of the nonwilderness islands; the development of new group site and other designated campsites on Sand and Basswood islands, new dispersed wilderness campsites, and new mainland campsites; the relocation of the Stockton Island – Presque Isle campground to Presque Isle; the development of a new visitor contact station/ranger station and ramp at Meyers Beach; and the extension of the mainland trail to Little Sand Bay would all result in the loss or alteration of soil in localized areas. So would the clearing of vegetation at light stations. Site preparation and landscaping work would disturb soils in the project areas and construction equipment would disturb and compact soils. The development of trailer pads for NPS housing and a visitor center at Little Sand Bay, a new visitor center/park headquarters in Bayfield, and a new operations/maintenance facility and staff apartments would likely occur in areas that have already been altered by past actions and developments; thus these actions would have a negligible effect on area soils. In total, about 24 acres of soil would likely be altered or lost by these new developments. The adverse impact on soils in the project areas would likely be moderate and long term, but from a parkwide perspective, the adverse impacts due to new developments would be minor to moderate and long term.

Visitation levels would be about the same as under alternative 1. Thus, the adverse impacts on soils due to visitor use would be expected

to be minor to moderate in localized areas and long term under alternative 4. Most of the soil impacts would likely occur along or near the shorelines of the islands that experience high use levels.

As in alternative 1, some soils may be compacted and eroded due to some existing campsites expanding, informal “zone” campsites being created, and user-created trails being formed in areas with facilities that receive relatively high levels of use. However, the continuation of monitoring, and the establishment of user capacity indicators and standards in alternative 4 should help ensure that an unacceptable expansion in campsite size does not occur. Thus, compared to alternative 1, alternative 4 would be expected to result in fewer soil impacts, resulting in a long-term, beneficial impact.

Cumulative Impacts. Soils in much of Apostle Islands National Lakeshore probably have been altered by past activities (e.g., logging, agricultural practices). Some soils on lands adjacent to the mainland unit of the park may be lost or modified in the future due to new development. Also in the future, if the Quarry Bay campsites on Stockton Island were relocated, this would affect soils in a localized area. Assuming the campsites were relocated to a relatively undisturbed site, soils would be lost or modified. When these impacts are added to the minor to moderate adverse impacts under alternative 2, there would be a long-term, minor to moderate, adverse cumulative impact on area soils—although the Quarry Bay action would add a very small increment to the overall cumulative impact.

Conclusion. Like all of the alternatives, most of the park’s soils would not be affected by the actions in alternative 4. However, some soils would be eroded and lost, and soil properties

would be altered due to construction of new facilities on the islands and mainland, and due to visitor use in localized areas on the islands. Overall, these adverse impacts would likely be minor to moderate and long-term in extent. On the other hand, establishing formal user capacity indicators and standards should help reduce the expansion of campsites and prevent soil erosion. This would have a long-term, beneficial impact. No unacceptable soil impacts or impairment to the park's resources and values would result from this alternative. When the impacts of alternative 4 are added to past and foreseeable future impacts (i.e., relocation of the campsites in Quarry Bay) there would be a long-term, minor to moderate, adverse cumulative impact on area soils. When the impacts of alternative 4 are added to past and foreseeable future impacts (i.e., relocation of the campsites in Quarry Bay) there would be a long-term, minor to moderate, adverse cumulative impact on area soils.

Geological and Coastal Processes

Analysis. With proper design and planning, the relocation of the Stockton Island – Presque Isle campground to Presque Isle would reduce soil impacts to the sandscape compared to alternative 1, resulting in a long-term, beneficial impact in this area.

It is expected that with proper design and planning, and appropriate mitigative measures, bank erosion due to visitors using the new water accessible mainland campsites would be negligible to minor and long term in extent.

With continuing visitor use of the islands' sandscapes and beaches, it is expected that the vegetative cover on some popular areas, such as the Raspberry and Ironwood sandspits, would continue to experience trampling, which in turn would increase the potential for wind and water erosion, affecting the characteristics of some sandscapes (e.g., size, shape). Erosion due to people climbing up and down lake banks also would continue at island campsites near the shoreline. Thus, visitor use

in alternative 4 would likely have the same effect on the park's sandscapes over time as visitor use in alternative 1: visitor use impacts would vary, depending on the level of use and environmental conditions, but could range from minor to moderate, and be long term and adverse.

As in alternative 1, some existing docks would continue to affect coastal processes, altering the transport of sediments along the shoreline, resulting in minor to moderate, long-term, adverse impacts in localized areas. But the Michigan Island dock and possibly several other docks on the former use and occupancy/life estates would be rehabilitated and improved, and several new docks might be installed in nonwilderness areas in alternative 4. As noted in the mitigative measures in chapter 3, improvements and new docks would not occur until studies of longshore sand transport have been completed. Although it is not certain what would come out of these studies, for some existing docks the improvements could include measures to reduce the impact of the docks on the movement of sand along the coastline. New docks also would be built with coastal processes in mind. With more sand available to replenish downstream areas, Lake Superior currents and waves would not be as likely to erode beaches as much as under alternative 1. Depending on the location, design, and extent of the docks, and assuming the frequency and intensity of major storms does not substantially change, alternative 4 could reduce past coastal process impacts for some docks, resulting in a long-term, beneficial, localized impact on a few of the park's sandscapes compared to alternative 1.

Cumulative Impacts. As noted above and in the "Affected Environment," coastal processes in the past have been altered in specific areas, such as the installation of the dock at Michigan Island. Climate change is expected to affect lake levels and thus would affect coastal processes, including sediment transport and the park's sandscapes and beaches. Because the changes due to climate change in the park are unpredictable, both in

their timing (whether they occur within the timeframe of this plan or beyond) and in magnitude or intensity of the impact—the effects of climate change on coastal processes could range from minor to major in intensity. When the effects of the actions in alternative 4 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse, cumulative impact. But alternative 4 would add a very small increment when added to the potential effects of climate change.

Conclusion. Alternative 4 would have both adverse and beneficial effects on coastal processes. Visitors and existing docks would likely continue to affect the park’s sandscapes and shorelines, resulting overall in a minor to moderate, long-term, adverse impact in localized areas of the islands. On the other hand, compared to alternative 1, the relocation of the Stockton Island – Presque Isle campground, and the rehabilitation of several docks would help reduce visitor and dock impacts on shorelines and sandscapes, resulting in a long-term beneficial, localized impact. None of these coastal process impacts would be considered unacceptable. None of the impacts would result in an impairment of park resources and values. When the effects of climate change are added to the effects of alternative 1, there would be the potential for a long-term, minor to major, adverse cumulative impact on coastal processes—although the actions in alternative 4 would add a very small increment to this overall impact.

Surface Water Quality

Analysis. As in alternative 1, in alternative 4 visitors would continue to affect water quality in localized areas through swimming and bathing, and through the disposal of graywater and trash. These activities can contribute to the degradation of water quality by increasing nutrient and bacteria levels, and other chemicals (e.g., petroleum-based products, sunscreen, soap). Some sedimentation also would occur at unsurfaced landings in localized areas where visitors put

in and take out their boats and in areas where bank erosion is occurring due to visitors walking down steep slopes. Overall, visitor use in alternative 4 would likely have the same impact as in alternative 1: a negligible to minor, long-term, adverse impact to water quality in localized areas due to relatively low use levels and the dilution effect of Lake Superior.

Overall, motorized boat use levels would not be expected to substantially change in the park under alternative 4. Thus, pollution from motorized boats, including MTBE (methyl tertiary butyl ether), PAHs (polyaromatic hydrocarbons), BTEX (benzene, toluene, ethylbenzene, and xylene) and heavy metals such as copper, would be expected to result in about the same overall minor, long-term, adverse water quality impacts as pollution from motorized boats in alternative 1. Also like alternative 1, there could be minor to moderate, long-term impacts to water quality in areas that receive high use levels, such as Presque Isle Bay and Little Sand Bay.

Unlike alternative 1, in alternative 4 the Michigan Island dock and possibly several other docks would be rehabilitated, and several new docks would be installed. Depending on the nature and extent of the work, there could be water quality impacts due to increased turbidity in adjacent waters. However, the application of mitigative measures should minimize potential impacts due to accidental spills. Any such adverse impacts from the dock work would be minor to moderate and short term in duration.

Under alternative 4 there could be potential water quality impacts due to the installation of a boardwalk over wetlands along part of the mainland lakeshore trail. However, careful selection of materials should avoid leaching of contaminants into the water. Some negligible, short-term, adverse impacts would occur during construction due to increased turbidity in the water.

Cumulative Impacts. Several sources of water pollution external to Apostle Islands

National Lakeshore have affected, and are likely to continue affecting, the water quality of the park. When added to the water quality impacts of alternative 4 being considered (negligible to minor, long-term, adverse impacts), there could be a minor to major, long-term, adverse cumulative impact to the park's water quality, depending on the type and quantity of pollutants that enter park waters. However, the increment added by alternative 4 would be relatively small compared to the impact from pollutants being added from actions outside the park boundary.

Conclusion. Alternative 4 would have the same negligible to minor long-term adverse impacts to water quality due to visitor use as alternative 1. Minor to moderate, short-term, impacts also would occur due to rehabilitation of docks in this alternative. None of these impacts would be considered unacceptable, and the level of impacts would not constitute an impairment of park resources and values. When the effects of alternative 4 are added to the effects of water pollution from sources outside of the park, there would be the potential for a minor to major, adverse cumulative effect on the park's water quality. However, the actions in alternative 4 would add only a small increment to the overall cumulative impact.

Wetlands

Analysis. As in alternative 1, some impacts would occur in wetlands due to people walking through the wetlands, trampling vegetation. However, only a few people would be expected to walk into the wetlands over the course of a year, resulting in negligible, short- and long-term, adverse impacts.

Under alternative 4, in order to complete the mainland lakeshore trail, a boardwalk would be built through wetlands in the vicinity of the Sand River. Construction of the boardwalk would result in the loss of some wetland vegetation, and the boardwalk could prevent vegetation from growing under it. This would have a moderate, long-term, adverse impact

on wetland vegetation. It is expected that boardwalk would be built with materials that would not pollute the water and would minimize impacts of hikers walking through the wetlands. Thus, the trail would be expected to have a moderate, long-term, adverse effect on wetlands in this area.

Cumulative Impacts. Climate change will likely affect the park's wetlands, including their species composition and water levels. For example, if the frequency or intensity of storms change, park wetlands could be affected. Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park's wetlands could range from minor to major in intensity. When the effects of the actions in alternative 4 are added to the potential effects of climate change, there would be the potential for a moderate to major, long-term, adverse cumulative impact on wetlands. But alternative 4 would add a small increment to the potential effects of climate change on wetlands.

Conclusion. Alternative 4 would have a moderate, adverse, short- and long-term impact due to the construction and maintenance of a boardwalk through wetlands along the mainland lakeshore trail, and would have a negligible, short- and long-term, adverse impact due to people occasionally walking through the wetlands. The effects of alternative 4 would not result in unacceptable impacts or impairment of the park's resources and values. When the effects of this alternative are added to the potential effects of climate change, there could be a moderate to major, long-term, adverse cumulative effect on the park's wetlands, although the actions in alternative 4 would add a very small increment to the overall cumulative impact.

Floodplains

Analysis. Like the previous alternatives, some people would likely trample and crush some vegetation in the Sand River floodplain. But relatively few people would be expected to

walk through the floodplains over the course of a year, resulting in negligible, short and long-term, adverse impacts to the floodplain.

Cumulative Impacts. No past, present, or foreseeable actions within or outside the park are expected to affect the Sand River floodplain. Thus, there would be no additive cumulative effects on the floodplain.

Conclusion. Alternative 4 would have a negligible, short and long-term, adverse impact due to people walking in the Sand River floodplain. However, the level of impact to floodplain values under alternative 4 would not constitute an impairment of the park's resources and values. No cumulative effects would occur as a result of alternative 4.

Vegetation

Analysis. Several of the proposed developments in alternative 4, including the trailer pads for NPS housing, the visitor center, day use area, staff apartments, beach ramp at Little Sand Bay, the new visitor center in Bayfield, and a new maintenance operations center, would likely occur in areas that have already been altered by past actions and developments, and thus would likely have a negligible to minor adverse effect on native vegetation.

Clearing of vegetation that is encroaching on the light station clearings would result in the loss of some native vegetation, which would have a negligible to minor, long-term, adverse impact depending on how much vegetation was removed.

However, several new park facilities would involve clearing of native vegetation. The construction and use of new trails on selected islands (e.g., Sand Island) and the mainland, the extension of the mainland lakeshore trail, new group campsites on Sand and Basswood, new individual campsites in the wilderness area, and new campsites on the mainland, a new day use site on one of the nonwilderness islands, the relocation of the Stockton Island – Presque campground to Presque Isle, and the

development of a new visitor contact station/ranger station at Meyers Beach would all result in the loss or alteration of vegetation in localized areas. The construction of the Lakeshore Trail boardwalk also would result in the loss of some wetland vegetation. In addition, the clearing of vegetation at light stations on the islands would result in the loss of native vegetation. In total, no more than about 24 acres of vegetation would likely be altered or lost by these new developments and actions in alternative 4. The adverse impact on native plants in the project areas would likely be moderate and long term, but from a parkwide perspective the adverse impacts due to new developments would be minor to moderate, and long term.

Efforts to partially restore the Hansen farm cultural landscape would likely entail the removal of some native vegetation and weeds from old fields. Although some native vegetation would be removed, this area has been disturbed and altered in the past, thus this action would have a minor, long-term, adverse impact on native vegetation populations in this localized area.

Under alternative 4, visitor use of Apostle Islands National Lakeshore, including hiking and camping, would continue to affect the park's vegetation. As in alternative 1, some vegetation would likely be lost due to the formation of user-created trails in popular areas such as campsites and picnic areas. Vegetation along the Lake Superior shoreline would continue to be trampled and damaged in places when visitors walk up and down the shoreline. Some plants would also probably continue to be lost through visitors walking on sensitive vegetation on sandscapes. Some existing designated campsites probably would expand in area over time, and user-created campsites would continue to be established or be expanded on islands, resulting in changes to and loss of vegetation in localized areas. If an area becomes cleared of vegetation due to the creation of a campsite(s), and if there were trees behind the cleared area and the beach, the trees would be more likely to be subject to blowdown. On the other hand, the continua-

tion of monitoring and the establishment of formal user capacity indicators and standards would assist managers in taking action before campsite conditions become unacceptable, which would have a long-term, beneficial effect. Weighing both the adverse and beneficial effects, visitor use under alternative 4 would be expected to have a long-term, minor to moderate, adverse impact on the park's native vegetation in localized areas.

As noted in the "Affected Environment" chapter, there has been a serious problem in the park with the introduction of nonnative species at construction sites. It is likely that some nonnative species would be introduced during construction projects in this alternative. In addition and in spite of education efforts, some nonnative plants could be introduced or spread by visitors in picnic areas and campsites. The potential for the spread of nonnative species would increase with the extension of the mainland lakeshore trail and other new developments. Although it is difficult to determine the impact on native species due to the uncertainties about the type of species that might be introduced in the future, and the locations and frequencies of introductions, it is likely that new introductions would occur. Even with monitoring and weed control efforts, the adverse effect of these impacts would be unknown, but could range from minor to major and be long term in duration.

Alternative 4 would have several beneficial impacts to native vegetation. The removal and restoration of most of the Stockton Island – Presque Isle campground would have beneficial impacts. Providing a ranger station at Meyers Beach and housing on Long Island would provide an increased NPS presence in these areas, which would aid in monitoring and taking action to address vegetation impacts due to visitors. Taken together, these actions would have a long-term, beneficial impact on the park's vegetation in localized areas.

Cumulative Impacts. Several potential actions, independent of this plan, could affect

the park's vegetation. As described in the "Affected Environment" chapter, much of the park's vegetation has been substantially altered by past human activities, including logging and fires, farming, the building of cabins, quarrying, and the development of roads and fish camps. The impacts of these past actions far outweigh the impacts of the actions being proposed in the alternatives in this plan.

In the future developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the loss and modification of vegetation in these areas. This would have a long-term, minor, adverse impact on natural vegetation in the vicinity of the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect vegetation in the area, which would add a minor, long-term, adverse incremental effect to the effects of alternative 4.

Nonnative species have been spreading in different locations in the park, such as Meyers Beach, due to past construction activities, visitor activities, and natural sources like wind and birds. Independent of the actions in the alternative, the spread of nonnative species is likely to continue in the future. From a parkwide perspective, this has resulted in a minor to major, long-term, adverse cumulative impact on the park's vegetation, depending on the species.

As noted in the "Affected Environment" chapter, deer are spreading from the mainland to the islands in increasing numbers. Increasing numbers of deer would browse the islands' native vegetation, reducing or eliminating such species as Canada yew, which could have a moderate to major, long-term adverse impact on some native vegetation on the islands.

Climate change likely has affected and will continue to affect the park's vegetation, including species composition and population

numbers. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the potential for wildfires and the spread of and seasons for insects, which in turn would have a minor to major, long-term, adverse impact on the park's native vegetation.

When the effects of all of these past and future actions are added to the adverse and beneficial effects of alternative 4, there would be a major, long-term, adverse, cumulative effect on the park's vegetation. However, the effects of alternative 4 would add a very small increment to the overall cumulative impact.

Conclusion. Alternative 4 would result in both adverse and beneficial impacts on the park's vegetation in localized areas. Taken together, restoration actions, the application of user capacity indicators and standards, and increased NPS presence on Long Island and Meyers Beach would have a long-term, beneficial impact. On the other hand, compared to the other alternatives, alternative 4 has the greatest potential to result in adverse impacts to native vegetation due to the development of new facilities and the potential for the spread of nonnative species. Minor to moderate, long-term, adverse impacts would occur due to the development of new facilities, and increased visitor use on some islands. The potential for the introduction and spread of nonnative invasive species in the park could increase, relative to alternative 1, resulting in an unknown impact on native vegetation. However, overall most of the park's vegetation would not be affected by the actions in alternative 4 (with the possible exception of the impact of nonnative species). None of the impacts would likely affect the integrity, distribution, or presence of native plant communities in Apostle Islands National Lakeshore. None of the vegetation impacts under alternative 4 would be considered unacceptable or sufficient to result in an impairment of Apostle Islands National Lakeshore's resources and values. There would be the potential for a long-term, major, adverse cumulative impact on the park's

vegetation when the effects of past, present, and foreseeable actions within and outside the park are added to the effects of alternative 4. But the increment added by alternative 4 to the overall cumulative impact would be very small.

Wildlife

Analysis. Some of the new developments in alternative 4 would occur in areas that have relatively natural vegetation, where few people have been present. These areas include new trails on selected islands, new group and individual campsites on Sand and Basswood islands, new campsites on the mainland and on the islands in the wilderness area. Other actions that could affect wildlife include the development of the new Meyers Beach visitor contact station/ ranger station, the extension of the mainland lakeshore trail to Little Sand Bay, and the relocation of the Stockton Island – Presque Isle campground to Presque Isle. These new developments and actions would result in a loss or alternation of approximately 24 acres of wildlife habitat, with some wildlife, such as forest birds and mammals (e.g., voles, squirrels, hares) being displaced from the areas. The extension of the mainland lakeshore trail and the wilderness campsites also would be another source of fragmentation of wildlife habitat. Noise generated from the construction activities and from visitor use of the new facilities could potentially result in a larger area being subject to wildlife disturbance and displacement. Although construction activities would result in short-term impacts on wildlife, use of the facilities would result in long-term effects. As a result of all the above proposed developments, there would likely be minor to moderate, long-term, adverse impacts on wildlife populations in localized areas.

Other new developments, including the trailer pads, apartments, day use area, and visitor center at Little Sand Bay, the visitor center in Bayfield, and the new maintenance/operations facility would probably be built in areas that have already been altered by past actions and developments and already have people

present. Wildlife remaining in these areas have adapted to the presence of people, but wildlife are still being affected. Courtship, territory establishment, intra-species communication, predation and predator avoidance, and effective use of habitat could already have been affected by noise in these areas. That said, it is expected that any adverse impacts to wildlife due to the above projects during the construction period would be negligible and short term.

Impacts due to visitor use in alternative 4 would be about the same as described under alternative 1. Wildlife populations, habitats, and behaviors already have been altered by the presence of people in popular areas of the park; this would continue under this alternative. Human use of the park would continue to be concentrated in areas such as the light stations, the islands' shorelines, and at campsites in alternative 4. Animals sensitive to human activities already avoid these areas when people are present. Wildlife that occupy these areas, such as red squirrels, hares, and mice, are mostly adapted to the presence of people and would not be noticeably affected by visitation. As in alternative 1, some animals would continue to be injured or killed by motor vehicles driving on roads in the mainland unit. Some animals, such as mice, blue jays, bears, and red squirrels, also probably would continue to be attracted by visitors feeding them or to areas where food and garbage are left out. The continuation of hunting and trapping would not be expected to adversely affect the park's populations, assuming that harvests stay at about existing levels, and there is careful monitoring and enforcement of the state's regulations by the state of Wisconsin and the park staff. Therefore, visitor use in this alternative would be expected to have a minor, long-term, adverse impact on the park's wildlife populations.

Alternative 4 would have some beneficial impacts on wildlife. With the relocation of most of the Stockton Island – Presque Isle campground to Presque Isle, away from key bear habitat, the potential for bear-human

conflicts would decline compared to alternative 1. Thus, it is likely in the future that fewer problem bears would need to be conditioned to avoid humans in alternative 4, resulting in a long-term, beneficial impact. In addition, providing a ranger station at Meyers Beach and staff housing on Long Island would provide a long-term NPS presence in these areas, which would aid in monitoring and taking action to address wildlife impacts due to visitors.

Neither the changes in visitor use nor the new facilities in alternative 4 would be expected to affect use of the park by wolves. Although several facilities would be built in the mainland unit and on the islands, most are largely in areas already used by people and should not affect use of the park by wolves or their prey populations. As noted in the "Affected Environment," the park is a very small part of the range and is not often used by wolves. The winter is the most likely time wolves would be in the park, when visitor numbers are low. As in alternative 1, use levels may increase in the future and it is possible, albeit unlikely, that some visitors might see a wolf in the mainland unit and affect its behavior. But this would not be expected to stop wolves from coming into the area or change their numbers, distribution, or use of the park. Any adverse impacts that would occur would be negligible and long term.

Cumulative Impacts. Like vegetation, several potential actions, independent of this plan, could affect the park's wildlife. As described in the "Affected Environment" chapter, the loss of and/or changes in vegetation have affected the habitat for wildlife in the park (e.g., the spread of deer). Hunting also has affected wildlife in the past and present.

In the future developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in the displacement of some wildlife and the loss and modification of wildlife habitat in these areas. In addition, noise generated by human activities in the vicinity of the islands, such as that generated by the use of motorized

watercraft, could also disturb or displace some wildlife, particularly if these uses were to increase. These actions would likely have a long-term, minor, adverse impact on wildlife populations in the vicinity of the park.

The possible relocation or redesign of the Quarry Bay campsites on Stockton Island, independent of this plan, would affect wildlife in the area, displacing some animals, which would add a minor, long-term, adverse incremental effect to the effects of alternative 4.

Climate change will also likely affect wildlife composition of the park. Some southern species will expand into the park, while other northern species will decline or disappear. Warming temperatures are expected to increase the spread of and seasons for insects, which could benefit some wildlife species and adversely affect other species. (See the “Affected Environment” chapter for more information.) Because the changes due to climate change in the park are unpredictable, both in their timing and in magnitude or intensity of the impact, the effects of climate change on the park’s wildlife could range from minor to major in intensity. When the effects of the actions in alternative 4 are added to the potential effects of climate change, there would be the potential for a minor to major, long-term, adverse cumulative impact on the park’s wildlife populations. But alternative 4 would add a very small increment to the potential effects of climate change on wildlife.

Wolves have been increasing in Wisconsin, and no known developments or actions are expected to substantially affect the wolf population, habitat, and prey on the Bayfield Peninsula. Although it is possible that the wolf may be delisted as a federally endangered species in the future, which may result in the removal of some wolves in the state, this would not be expected to affect the overall wolf population in the region of the park. Adding the negligible effects of alternative 4 to the other past, present, and foreseeable events in the area would not result in a cumulative impact to the wolf population.

Conclusion. Alternative 4 would result in both adverse and beneficial impacts to wildlife in localized areas. Most wildlife in the park would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species. New developments on the islands and the mainland would result in the loss of wildlife habitat, resulting in a minor to moderate, long-term, adverse impact. Minor long-term adverse wildlife impacts also would occur due to visitation in the park. On the other hand, alternative 4 would result in long-term, beneficial impacts due to increased NPS presence at Meyers Beach and Long Island, and the relocation of the Stockton Island – Presque Isle campground away from key bear habitat. There would be the potential for a minor to major, long-term, adverse cumulative impact on the park’s wildlife when the effects of alternative 4 are added to the potential effects of climate change. But the increment added by alternative 4 to the overall cumulative impact would be very small. None of the wildlife impacts resulting from alternative 4 would be considered unacceptable or would constitute an impairment of the park’s resources and values.

Alternative 4 would also have the same effects on the wolf population as the other action alternatives. The new developments, management actions, and changes in visitor use as a result of alternative 4 would not affect the area’s overall wolf population and habitat. As in all of the alternatives, rare encounters of wolves and visitors may have a negligible adverse impact on a few wolves in the area, but this would not affect the overall population. Thus, alternative 4 may affect, but would not be likely to adversely affect, the park’s wolf population. No cumulative impacts would occur, nor unacceptable impacts, nor impacts that would result in an impairment of the park’s resources and values.

Federal and State Threatened and Endangered Species

Analysis. No new actions or developments would occur on Long Island or the Michigan Island sandspit under alternative 4 that would affect the federal and state endangered piping plovers in the park. As in alternative 1, visitors and their dogs could disturb plovers.

However, providing NPS housing at the Long Island light station would enable NPS staff to more effectively monitor the plover nests and reduce the potential for visitor disturbance. In addition, with continued efforts to protect nesting birds, including visitor education efforts and temporary closures of beaches, it is less likely that visitors would deliberately or accidentally disturb the plovers. If impacts from visitor use were identified in the future, the park staff would consult with the U.S. Fish and Wildlife Service to identify and implement additional appropriate mitigative measures. Consequently, under alternative 4, visitors might affect, but would not likely adversely affect, piping plovers in the park.

Cumulative Impacts. As described in the piping plover recovery plan, increasing habitat loss, recreational pressure, predation, and contaminants are likely responsible for continuing population declines of the piping plover throughout its range (USFWS 2003). Outside of the park, habitat loss and modification has historically affected the Great Lakes region, although this impact is now thought to be occurring at a much reduced level (J. Trick, biologist, U.S. Fish and Wildlife Service, pers. comm., October 22, 2008). Predation and disease, the use of motorized vehicles on beaches, recreational activities on beaches (e.g., beach walking, bike riding) likely will continue to affect the birds. Contaminants, pollution, and noise from human activities within and outside the park also may be affecting the species, although this is unknown. Although actions are being taken to protect piping plovers and their species, such as controlling human access to nesting areas and educating the public, the species is likely to continue to be imperiled during the life of this plan.

Independent of the alternative, park staff would continue to monitor and protect all piping plover nest sites.

As noted above, alternative 4 would have a beneficial effect on the protection of piping plovers on Long Island. When this beneficial impact is added to the effects of actions occurring outside the park, there would overall be a long-term, adverse cumulative impact. However, the effect of alternative 4 on the overall cumulative impact would be a very small beneficial increment.

Conclusion. Alternative 4 would have the same effect on piping plovers as the other action alternatives. No new developments or actions would occur on the beaches under alternative 4 that would have the potential to affect the piping plover in the park. Visitor use on island beaches would continue to have the potential to disturb the plovers, but with increased NPS presence on Long Island and the continuation of other protection measures, impacts would be expected to be negligible. Thus, alternative 4 may affect, but would not likely adversely affect, the park's piping plovers. This alternative would not result in impacts that would be considered unacceptable or result in an impairment of the park's resources and values. The effect of alternative 4 added to the effects of other past, present, and foreseeable future actions occurring outside the park would result in a long-term, adverse cumulative impact, although the increment added by the alternative would be beneficial and very small.

Natural Soundscape

Analysis. In alternative 4, noise would result from the construction and use of several new developments, including new campsites, trails, a day use area, a new visitor contact station/ranger station at Meyers Beach, trailer pads, a new maintenance/operations facility, and a new visitor center in Bayfield. In some areas the noise from construction equipment (e.g., chainsaws) would be minor to moderate, but it would be temporary and localized, and occur at different times and places in the park.

In areas where there are other people and facilities, such as Meyers Beach, Bayfield, and Little Sand Bay, the impact of this noise would be less than in areas where there are relatively few or no people, such as the potential areas for the new wilderness campsites and the eastward expansion of the mainland lakeshore trail.

As in alternative 1, occasionally noise from NPS maintenance and management activities, such as trail maintenance, grass mowing, pumping of vault toilets, and restoration activities, would continue to be heard on the park's islands. Most noise from these activities would be in or near developed areas that are already exposed to noise from vehicles, motors, and visitors. Overall, noise from ongoing maintenance and restoration activities would have a minor to moderate adverse impact on the natural soundscape in local areas, depending upon the activity, presence of other facilities and people, vegetation, and wind. The impacts would be of short duration, but because they would occur over the life of the plan, the impact would be long term.

As in alternative 1, in alternative 4, there would be few human-generated noises during much of the year—particularly the winter—due to the absence of people. But during the peak use season, there would be moderate levels of noise due to visitors and motorboats stopping at the islands. Noise levels would be most noticeable in developed areas and popular use areas, such as the light stations, anchorages, or docks at Rocky, South Twin, Raspberry, Oak and Sand islands, the Stockton Island Visitor Center, Little Sand Bay, and Meyers Beach. Noise levels would also likely be moderate during the winter at Meyers Beach, depending on conditions, with visitors going out to see the ice caves. These impacts would be brief, but would increase in intensity and duration during holidays and weekends when high numbers of visitors are present. Noise from regular concessioner cruise services in the summer to Raspberry, Stockton, and Oak islands also would continue, with large groups of people

disembarking on Raspberry and Stockton islands. Because visitor use levels under alternative 4 would be about the same as under alternative 1, the impacts of visitor generated noise in the two alternatives would be about the same—actions would result in long-term, minor to moderate, adverse noise impacts in local areas on the mainland and most islands throughout Apostle Islands National Lakeshore.

Cumulative Impacts. Noise from outside the park has affected the park's soundscape in the past and will continue to do so in the future. As described in the "Affected Environment" chapter, depending on location and wind direction, common human-caused sounds include engines from watercraft passing near the park, vehicles on roads on the mainland, sounds from logging operations, and urban sounds from Bayfield would continue to be heard in the park. Noise from the concession boat would continue to be heard not just at the islands it visits, but also on the islands it passes by. In the winter, noise from snowmobiles passing by the park would continue to be heard.

It is possible in the future that events like the speedboat "poker run" and other unregulated activities may occur just outside the park boundary, generating substantial noise. In addition, developments such as second homes may be built on some lands adjacent to the mainland unit of the park, which would result in noise during and after the construction period in these areas.

These adverse noise impacts would be minor to moderate (depending upon the type of noise and location), intermittent, and long term—occurring every year.

When these impacts are added to the continuing impacts of alternative 4 there would be the potential for a long-term, minor to moderate, adverse cumulative impact on the natural soundscape. However, these cumulative impacts would primarily occur at certain times in the summer, such as weekends. The actions in alternative 4 would

add a very small increment to the overall cumulative impact.

Conclusion. As in the other alternatives, in alternative 4 most of the park would remain relatively quiet, with few human-generated noises affecting the natural soundscape. Alternative 4 would result in short- and long-term, minor to moderate, adverse impacts due to the construction and use of new facilities on the islands and mainland. Minor to moderate, adverse noise impacts also would occur in local areas on the mainland and most islands in Apostle Islands National Lakeshore, particularly in developed areas, due to visitor use and NPS maintenance and management activities. None of these noise impacts, however, would be unacceptable or be of a magnitude to result in an impairment of the park's resources and values. There would be the potential for a long-term, minor to moderate, adverse cumulative impact to the soundscape when the noise resulting from implementing this alternative is added to noise from activities outside of the park. But the increment added by alternative 4 to the overall impact would be very small.

WILDERNESS CHARACTER

Analysis. With one exception, no major changes in management would occur in the Gaylord Nelson Wilderness in alternative 4.

As in alternative 1, most of the wilderness area would be expected to receive very low use levels. Although use levels on the islands might slightly increase over time, it is expected that most of these visitors would stay in popular use areas and not venture into the wilderness. There would continue to be a few places where relatively large groups of people (10-30+) may gather at a time in the wilderness area, particularly on weekends and holidays—places such as the beaches at the southeast side of Raspberry Island and on the north side of York Island. In these areas, opportunities for solitude would be diminished.

Like the other alternatives, signs of people, including hiking trails, campsites, and some historic structures, would be evident in a few areas in the wilderness area in alternative 4, as would occasional user-created trails and trampled vegetation/bare ground from informal campsites. The one difference in this alternative from the other alternatives is that additional dispersed wilderness campsites would be developed. As a result, additional relatively small areas would appear to be less natural and opportunities for solitude would likely decline. This would have a minor, long-term, adverse impact on the wilderness character compared to alternative 1. But most visitors in this alternative would continue to find what they perceive to be natural conditions in most of the wilderness area—visitors would continue to find a forested landscape generally appearing untrammelled by people, with few obvious signs of disturbance or alteration.

Implementation of alternative 4 would not alter opportunities for primitive recreation in the wilderness area. Opportunities for primitive, unconfined recreation would continue to be present on most of the islands in the wilderness area. Day-use visitors would have complete freedom to go wherever the pleased, except for the small number of areas that are closed for resource protection purposes (e.g., Gull and Eagle islands). For visitor safety and resource concerns, permits for overnight camping at designated campsites and for zoned camping would continue to be required. The permit system would ensure that overcrowding of campers does not occur in the wilderness. Although most visitors would likely agree that there would be outstanding opportunities for primitive, unconfined recreation on the islands, permit and camping requirements would continue to slightly diminish these qualities, resulting in a minor, long-term, adverse impact. It is possible that the implementation of user capacity indicators and standards could result in additional restrictions on visitor use if standards were exceeded, but it is not possible to speculate what actions, if any would be taken—and obtrusive use restrictions would

only be taken as a last resort, if no other actions could correct the problem.

Cumulative Impacts. Actions independent of alternative 4 have affected, and would likely continue to affect the wilderness character of the park. Noise generated from human activities outside of the park, such as that generated by the use of motorized boats, would continue to affect some visitors' perceptions of solitude, resulting in a long-term, minor adverse impact to wilderness character. As noted in the impact topics above, the spread of nonnative species and climate change have affected, and are likely to continue adversely affecting the park's biological communities—including the wilderness area—resulting in a long-term, minor to moderate, adverse impact to wilderness character (i.e., adverse effect on apparent naturalness of the wilderness areas). On the other hand NPS staff have worked to restore disturbed areas in wilderness and likely will continue to do so in the future. This would have a minor, long-term, beneficial impact on wilderness character.

When all of the above actions are added to the impacts in alternative 4, there would be the potential for a minor to moderate, long-term, adverse cumulative impact on the wilderness character. However, alternative 4 would add a very small increment to the overall cumulative impact.

Conclusion. As in all of the alternatives being considered, in alternative 4 visitors would be able to find in most of the wilderness area outstanding opportunities for solitude and primitive, unconfined recreation in what most people perceive to be a natural landscape. However, compared to alternative 1, alternative 4 overall would have a minor, long-term, adverse impact on wilderness character. Alternative 4 would result in a minor, long-term, adverse impact to the area's wilderness character, due to the continuing requirement to obtain a permit to camp in the wilderness. Developing additional dispersed wilderness campsites also would have a minor, long-term, adverse impact, due to some visitors

perceiving a loss of solitude and apparent naturalness. None of these impacts to wilderness character would be considered unacceptable. When the effects of actions occurring independent of the alternative are added to the effects of alternative 4 there would be the potential for a minor to moderate, adverse, cumulative effect on wilderness character—albeit alternative 4 would add a very small increment to this overall cumulative impact.

CULTURAL RESOURCES

Historic Structures / Cultural Landscapes

Light Stations

Under alternative 4 (in common with alternative 3), the Raspberry Island light station would remain the primary focus of preservation treatments and visitor use opportunities because of its relative accessibility and renown as a “showplace” property. Rehabilitation and restoration of the light tower and attached keeper's quarters were undertaken in 2006 to address structural deterioration, enhance visitor interpretation, and provide for NPS seasonal employee housing. As funding permits, rehabilitation and/or restoration of the Raspberry Island light station's cultural landscape would also be carried out in accordance with recommendations from the 2004 cultural landscape report, and the *Secretary of the Interior's Standards for the Treatment of Historic Properties (with Guidelines for the Treatment of Cultural Landscapes)*. Implementation of these measures would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the Raspberry Island light station.

The park staff would stabilize and preserve the other historic light stations in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. With particular regard to the standards and guidelines for preservation, the existing form, features, and architectural detailing of the light station buildings and structures would be

retained. Preservation maintenance of character-defining features (with primary focus on building exteriors) would be emphasized over replacement of historic fabric. Stabilization measures would be carried out to structurally reinforce, weatherize, and correct unsafe conditions. As needed, shoreline stabilization also would be undertaken (such as that completed for the Raspberry Island and Outer Island light stations) to control erosion of the shoreline embankments that has threatened the historic structures. Implementation of these preservation and stabilization measures would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the historic light stations.

Rehabilitation measures would be carried out at the Raspberry Island and Long Island light stations to provide for NPS staff use and housing. In accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (with particular attention to the standards and guidelines for rehabilitation), historic building materials and character-defining features would be protected and maintained to the extent possible, although extensively deteriorated, damaged, or missing features would be replaced with traditional or substitute materials. Possible alterations and additions may be appropriate to permit efficient contemporary uses of the structures and buildings. However, no public overnight use would occur at the other light stations, and consequently there would be no need for interior rehabilitation of these structures. Rehabilitation of selected light stations carried out in accordance with the *Secretary's Standards* would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on these historic properties.

Although the primary focus of cultural landscape restoration and rehabilitation would be reserved for the Raspberry Island light station, the cultural landscapes of other light stations would be preserved and stabilized to maintain the integrity of

landscape features identified as contributing to site significance. Historic views may be obscured in some instances by trees and other vegetation encroaching into the larger surrounding areas historically reserved for the light stations. However, preservation of cultural landscape elements associated with the light stations would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on the historic properties.

Other Historic Structures and Cultural Landscapes

National register-listed or national register-eligible structures and buildings associated with historic farmsteads, tourism/recreational sites, fishing and logging camps, etc. would be preserved and stabilized in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Contributing cultural landscape features associated with these sites would also be preserved and stabilized. The historic Hokenson fishery on the mainland at Little Sand Bay may be considered in future planning for rehabilitation and adaptive use as a visitor center or contact facility. These actions would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on historic properties.

For selected historic properties currently under use and occupancy leases or life estates (i.e., the former fishing settlement and later resort on Rocky Island, the West Bay Club on Sand Island, and Shaw Point / Camp Stella on Sand Island), the park staff would undertake various preservation treatments and adaptive uses when each life estate is extinguished or expires and/or private occupancy has ceased. Historic structures would be preserved at the Rocky Island settlement, and one or more docks may be rehabilitated. The West Bay Club lodge would be preserved, the dock would be rehabilitated for public overnight use, and the historic road between the West Bay Club and East Bay would be used for trail access. At Shaw Point, docks would be rehabilitated for public overnight use,

contributing Camp Stella historic structures would be preserved and interpreted, and the historic road between Shaw Point and East Bay would be used as trail access. Contributing structures at the Hansen farm would be stabilized and preserved, and the main farmhouse possibly restored. The cultural landscape of the farm would be partially restored and rehabilitated including the reestablishment of orchards. Implementation of these actions in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* would have long-term negligible to minor adverse impacts as well as long-term beneficial impacts on these historic properties.

Cumulative Impacts. Historic buildings, structures and cultural landscapes at the park are susceptible to severe weathering and storm damage from harsh climatic conditions. Forest vegetation encroaching near historic structures and sites also presents a risk of fire damage from increasing fuel loads. Park staff also face logistical challenges and the additional expenses associated with transporting materials and equipment by boat from the mainland to island docks, and subsequently from docks to worksites on the islands to carry out preservation activities. Consequently, preservation treatment of historic buildings, structures and cultural landscapes may not always occur in a timely manner and/or may be deferred in some instances. The integrity of these historic properties can be adversely affected if historic fabric deteriorates or is lost. However, in conformance with the *Secretary's Standards* and as funding permits, the national lakeshore continues to carry out stabilization and preservation of historic structures (e.g., reroofing, repointing, painting, structural reinforcement and other repairs) to arrest deterioration and to retain as much of the historic integrity of these structures as possible. These measures, in addition to more extensive preservation treatments such as the rehabilitation and restoration of the Raspberry Island light tower and keeper's quarters, have had long-term beneficial impacts.

The impacts associated with implementation of alternative 4 would have long-term negligible to minor adverse impacts and long-term beneficial impacts on the park's light stations, and other historic buildings, structures and cultural landscapes. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. However, the impacts of the other actions described above, in combination with the adverse and beneficial impacts of alternative 4, would result in long-term negligible to minor adverse cumulative impacts.

Conclusion. Implementation of actions proposed by alternative 4 would have long-term negligible to minor adverse impacts on the park's light stations and other historic structures, and cultural landscapes listed in or eligible for listing in the National Register of Historic Places. Adverse impacts would result primarily from potential alterations, additions and/or replacement of historic fabric and other character-defining features determined necessary to preserve, restore, or rehabilitate historic structures and landscape elements. However, implementation of appropriate preservation, restoration, or rehabilitation treatments in accordance with the *Secretary's Standards* would also help ensure the long-term preservation of these historic properties—resulting in a beneficial impact. There would also be long-term negligible to minor adverse cumulative impacts on these historic properties from implementation of alternative 4 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 4 would result in no adverse effect on historic structures and cultural landscapes.

Archeological Resources

A variety of development actions could occur to support visitor activities under alternative 4. In nonwilderness areas, more trails and campsites would be provided, existing docks would be improved, and additional docks would be constructed. Day use sites for large groups would be added, and most of the Stockton Island – Presque Isle campground presently on the tombolo would be relocated to Presque Isle. In wilderness areas, there would be a small increase in the number of dispersed designated campsites, and some trails may be reconfigured or relocated. New construction on the mainland unit would include additional trails, campsites, a day-use area and NPS staff apartments at Little Sand Bay, and a visitor contact station and accessible visitor-use ramp at Meyers Beach.

Ground-disturbing construction activities associated with development proposals have the potential to impact archeological resources. In consultation with the Wisconsin state historic preservation office and affiliated tribal historic preservation offices, the Park Service would ensure that archeological assessments and surveys are carried out for all areas of potential effect proposed for development prior to construction. Known resources would be avoided to the greatest extent possible. If during construction previously undiscovered archeological resources were uncovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed through further consultation. Few, if any, adverse impacts would be anticipated.

NPS archeologists would continue to monitor the condition of known archeological sites, and would undertake appropriate protection and stabilization measures as necessary to reduce or avoid site impacts possibly occurring from natural erosion, visitor use, or other factors. NPS archeologists would also continue to carry out survey inventories and documentation of archeological resources in fulfillment of section 110 requirements of the National Historic Preservation Act. Continuation of archeological resource management actions under existing laws and policies would have long-term negligible to minor adverse impacts on archeological resources.

Cumulative Impacts. Archeological resources at the park (and throughout the region) are subject to a variety of disturbances associated with shoreline erosion and other natural erosion processes, high winds that can overturn trees and dislodge buried sites, ground-disturbing construction activities, inadvertent visitor use impacts, artifact looting, etc. These factors can contribute to adversely affect the integrity of archeological resources as the potential of impacted sites to yield important prehistoric or historic information is diminished and/or irretrievably lost. However, understanding of regional prehistory and history can also benefit as archeological information continues to be acquired through ongoing research and perhaps from data recovery investigations carried out in fulfillment of mitigation requirements.

The impacts associated with implementation of alternative 4 would have long-term negligible to minor adverse impacts on the park's archeological resources. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. However, the impacts of the other actions described above, in combination with the impacts of alternative 4, would result in long-term negligible to minor adverse cumulative impacts.

Conclusion. Implementation of actions proposed by alternative 4 would have long-term negligible to minor adverse impacts on the park's prehistoric and historic archeological resources listed in or eligible for listing in the National Register of Historic Places. There would also be long-term negligible to minor adverse cumulative impacts effects on archeological resources from implementation of alternative 4 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 4 would result in no adverse effect on archeological resources.

Ethnographic Resources

A variety of development actions could occur to support visitor activities under alternative 4. In nonwilderness areas, more trails and campsites would be provided, and docks would be improved or additional docks may be constructed. Day use sites for large groups would be added, and most of the Stockton Island – Presque Isle campground presently on the tombolo would be relocated to Presque Isle. In wilderness areas, there would be a small increase in the number of dispersed designated camp sites, and some trails may be reconfigured or relocated. New construction on the mainland unit would include additional trails, campsites, a day-use area, and NPS staff apartments at Little Sand

Bay, and a visitor contact station and accessible visitor-use ramp at Meyers Beach. Although management information to identify the existence or location of ethnographic resources is limited at the park, ethnographic resources could potentially be impacted as a result of these ground-disturbing construction activities. Continuing consultations with the Ojibwe and other affiliated tribes to identify ethnographic resources would minimize the possibility that unknown sites could inadvertently be disturbed by visitor use or NPS activities. Long-term negligible to minor adverse impacts would be anticipated.

NPS staff would continue to collaborate with the Ojibwe and other affiliated tribes to identify and evaluate potential ethnographic resources by conducting appropriate research and investigations (i.e., ethnographic overviews and assessments, traditional use studies, ethnographic landscape studies, oral histories, etc.). Identified ethnographic resources meeting the criteria of national register-eligibility would be documented and managed as "traditional cultural properties." Efforts to identify, document and protect ethnographic resources would have long-term, beneficial impacts on these resources should they be found to exist in the park.

In consultation with affiliated tribes, the Park Service would continue to permit customary harvest and consumptive use of park resources, including hunting, fishing, and gathering plants and berries. These activities would be carried out in accordance with park purposes and NPS policies, with the provision that they do not to adversely affect park wildlife or the reproductive potential of plant species, or otherwise adversely affect park resources. Also in accordance with applicable laws and policies, the Park Service would permit tribal access to park areas for traditional religious, ceremonial, and other customary activities. In consultation with the tribes and consistent with tribal goals, the Park Service would protect sacred sites and other ethnographic resources should these be identified. Providing and protecting tribal access to traditional use areas in the park, and

protection of customary hunting, fishing and gathering activities would have long-term, beneficial impacts on ethnographic resources.

Cumulative Impacts. Ethnographic resources at the park (and throughout the region) are subject to a variety of disturbances associated with erosion and other natural processes, ground-disturbing construction or development activities, inadvertent visitor use impacts, blocked access to traditional use areas, artifact looting, etc. In part because of tribal concerns for retaining the confidentiality of ethnographic resources, land managers are occasionally challenged to provide adequate protection for these resources because of the limited information available regarding their potential existence, nature and location. These factors can contribute to adversely affect the integrity of ethnographic resources having particular significance to tribes and other cultural groups. However, ongoing research and information gathered from tribal consultations can provide long-term benefits by increasing understanding and appreciation for the protection of regional ethnographic resources.

The impacts associated with implementation of alternative 4 would have long-term negligible to minor adverse impacts on the park's ethnographic resources. Other past, present, and reasonably foreseeable actions would result in both negligible to minor adverse and beneficial impacts. However, the impacts of the other actions described above, in combination with the impacts of alternative 4, would result in long-term negligible to minor adverse cumulative impacts.

Conclusion. Implementation of the actions proposed by alternative 4 would have long-term negligible to minor adverse impacts on ethnographic resources at the park. Long-term negligible to minor adverse cumulative impacts on ethnographic resources would also occur from implementation of alternative 4 in conjunction with other past, present or reasonably foreseeable actions.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Apostle Islands National Lakeshore, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's *General Management Plan* or other relevant NPS planning document, there would be no impairment of the park's resources or values.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementing alternative 4 would result in no adverse effect on ethnographic resources.

VISITOR USE AND EXPERIENCE

Ability to Access the Park, Including Universal Access

In alternative 4, the focus would be on providing more structured recreation opportunities for visitors, especially on the mainland. Existing public docks would be maintained and possibly improved, and more public docks might be provided where appropriate and needed. In addition, some of the docks associated with the former use and occupancy/current life estates would be rehabilitated for public day and possibly overnight use. Mooring buoys may also be provided in selected high use bays, increasing access opportunities. This alternative would improve access to desired locations. Upon termination of the existing reservations and the completion of rehabilitation by the Park Service, access to Rocky Island and Sand Island also would be improved, resulting in a long-term, major, beneficial impact.

In this alternative, in addition to the existing facilities that are accessible to visitors with disabilities, a new access ramp to the beach will be added at Meyers Beach. The addition of this facility would enhance visitors' opportunities to access Meyers Beach, a

popular location for viewing the islands and the nearby sea caves. This new facility would result in a long-term, moderate, beneficial impact.

Ability to Participate in a Diverse Range of Lake and Island Related Recreation Opportunities and Experiences

This alternative would include additional recreation facilities on the nonwilderness areas of the islands. Existing lake and island recreational opportunities would continue to be available. Most of Sand, Basswood and Long Island would be in the backcountry zone to protect resources while allowing for exploration of additional nature-based recreation opportunities.

New facilities would include new trails on selected islands, and additional designated campsites and group campsites. The group campsite on Oak Island would remain. Also, new trail opportunities that make use of historic road routes may be provided to connect the West Bay Club and East Bay, as well as Shaw Point and East Bay. In addition, one or more day use sites for large groups would also be provided in appropriate locations. All of these facilities would increase the diversity of day and overnight opportunities available to visitors who make the trip to visit one or more of the islands. The opportunity to have an “island experience” is considered a fundamental value of the park. In addition, people expressed a desire for these additional facilities, particularly the additional group campsites. The addition of these facilities to the existing opportunities on the islands would result in a long-term, moderate, beneficial impact.

This alternative also includes the proposal to relocate the Stockton Island –Presque Isle campground from the tombolo to Presque Isle, with the exception of three to four campsites on the north end of the campground; this would be done to mitigate existing resource impacts. This campground is popular for many repeat visitors; the campsites along the shoreline are considered

highly desirable due to the great lake views and privacy between sites. The new sites on Presque Isle will likely have similar views, more amenities, and a more efficient and effective design, which will result in a higher quality campground, resulting in a long-term, moderate, beneficial impact on the visitor experience. Keeping three to four sites on the north end of the Stockton Island – Presque Isle campground will be an additional benefit for repeat visitors who enjoy staying at the existing campground; the associated visitor experience at the three to four sites that remain in place may be slightly improved due to reduced levels of visitor use and associated noise nearby—resulting in a long-term, minor, beneficial impact. During the construction of the new campground and the relocation of camping activities, there will be short-term, minor, adverse impacts to visitors due to noise, temporarily restricted access, and visual intrusions.

The park would continue to provide outstanding opportunities for solitude, quiet, “wildness,” connection with nature, and first hand discovery of the islands’ history. Opportunities for solitude, quiet, and connection with nature would be largely preserved. First, the majority of the wilderness areas would be zoned primitive, which would direct the National Park Service to continue protection of the values of natural quiet and solitude, and opportunities for visitor contemplation, naturalness, and primitive recreation. These are some of the most highly valued characteristics of the park, and the preservation of these values would result in a long-term, major, beneficial impact. There would be a small gain in campsite opportunities in designated wilderness. This would increase primitive camping opportunities, resulting in a long-term, minor, beneficial impact. Further, there is a possibility that some designated campsites and trails may be reconstructed and relocated to protect resources or improve visitor experiences. For those visitors who enjoy camping at a particular wilderness campsite or hiking a specific trail, the potential relocation or realignment of these facilities may result in a

long-term, minor, adverse impact. In addition, this may include a short-term, minor, adverse impact during the relocation and construction of new sites and trails. However, if campsites are relocated to increase privacy and seclusion between sites, this may enhance opportunities for solitude, resulting in a long-term, minor, beneficial impact.

Although this alternative includes high levels of protection for the qualities of solitude and primitive recreation, the proposals in this alternative related to increasing structured recreation opportunities and related facilities, including improved access to the nonwilderness portions of the islands, will likely bring more visitors to these areas. This may make achieving the desired visitor experiences of solitude and primitive recreation in the wilderness areas more challenging. The potential increase in visitor use levels and the potential for larger group sizes in some locations may exacerbate some of the current impacts related to crowding and noise impacts at high use locations, including docks and boat launches and landings. Further, visitor access to some of the former use and occupancy/current life estates and possibly more light stations may increase use levels, including overnight use, which may increase the potential for crowding and noise impacts on adjacent areas. Lastly, the group campsite on Oak Island will remain, which has localized impacts on opportunities for solitude and primitive recreation in designated wilderness. All of these impacts would be localized to the immediate areas with more recreation facilities and use, so the overall impact to solitude and primitive recreation would be a long-term, minor, adverse impact.

To help mitigate these concerns, this alternative includes the institution of user capacity indicators and standards to guide long-term visitor use management in the park. The park would monitor several indicators related to visitor experience and resource impacts that identify if and when additional management strategies are needed to achieve desired conditions. The park staff would take

all actions necessary to ensure that these indicators stay within standard to protect the highly valued opportunities for solitude in the park. The inclusion of these types of indicators in the park's monitoring program would result in a long-term, moderate, beneficial impact. Specific actions to achieve the standards identified in this management plan would be evaluated under the requirements of the National Environmental Policy Act, the National Historic Preservation Act, and other applicable laws and policies.

Mainland Recreational Opportunities and Experiences

In this alternative, the mainland would be primarily in the backcountry zone, except for Little Sand Bay and Meyers Beach that will be zoned with the frontcountry zone. This would direct the NPS to promote outstanding opportunities to enjoy natural resources and solitude in the backcountry zone and convenient and easy access to developed, high use, recreational and interpretive areas in the two areas zoned with the frontcountry zone. This zoning pattern would continue to promote concentration of high use and educational opportunities in the existing developed areas, while promoting values of nature based recreation and contemplation in other areas of the mainland. This would support much of the desired condition heard from the public during scoping and would result in a long-term, moderate, beneficial impact to recreation opportunities on the mainland.

This alternative also includes specific strategies to improve mainland recreational opportunities, including the establishment of walk-in campsites and water access campsites. These proposals would increase the diversity of structured recreation opportunities that are nature based and focus on the lake and islands. The construction of a handicap access ramp at Meyers Beach would improve recreation opportunities by providing access to a greater diversity of visitors.

A large number of visitors to the park only visit the mainland, so these new opportunities would allow visitors to experience the lake and gain views of the islands, enhancing the visitor experience of the park from the mainland. Also, some of these improvements were specifically mentioned by the public during scoping for this plan. These new opportunities on the mainland would result in a long-term, moderate, beneficial impact.

Another specific strategy is to provide a large group day-use area at Little Sand Bay. The park does not currently have facilities that purposively accommodate groups, although groups do occasionally congregate at Little Sand Bay. Having appropriate facilities for this purpose will improve the range of visitor opportunities on the mainland, and concentrate group activity in a specific location to minimize impacts on other visitors. This would result in a long-term, minor, beneficial impact.

However, these new opportunities may bring higher volumes of use that could cause additional crowding during peak use times, resulting in a long-term, minor, adverse impact.

Opportunities to Understand the Significant Stories of the Apostle Islands

In this alternative, the visitor center in the historic courthouse in the City of Bayfield will remain at its current location without any improvements. The historic building is very important to the gateway community and has an excellent auditorium. However, this facility has limited, inflexible space for exhibits and for direct interaction between visitors and NPS staff and volunteers. Also, although the historic building is located in the center of the City of Bayfield, it is outside of the immediate transportation routes through town, so it has limited visibility to out of town visitors. In addition, the current location is distant from the concession cruise boat, so few cruise visitors access the visitor center. Finally, there are no views of the islands or Lake Superior from the facility. Continuing to use the

existing visitor center without any improvements would result in a long-term, minor, adverse impact.

This alternative includes the replacement of the Little Sand Bay Visitor Center with a smaller visitor center, possibly through the conversion of the historic Hokenson House. The current Little Sand Bay Visitor Center is in poor condition and has very limited space for exhibits. A replacement contact station that provides easily accessed and updated, high-quality orientation, interpretation, and information would likely improve the visitor experience at this location and result in a long-term, minor, beneficial impact. This alternative would not include any changes to the Stockton Island Visitor Center or the Northern Great Lakes Visitor Center.

This alternative includes the addition of a visitor contact station at Meyers Beach. Currently there is no visitor contact facility in this area of the park. Meyers Beach is a heavily visited location due to the access point for the islands, the trailhead for the Lakeshore Trail and the close proximity of the sea caves. Many visitors to the park may visit only this location or access the islands from this point without visiting the Bayfield or Little Sand Bay visitor centers. A visitor contact station at this location would enhance the opportunities for visitors to receive information about the park, including interpretation of important natural and cultural resources. This would result in a long-term, moderate, beneficial impact on opportunities to understand important stories of the Apostle Islands.

It is likely that the emphasis in this alternative on providing more structured recreation opportunities, especially on the mainland, will create a future need for additional education and orientation via nonpersonal services such as bulletin boards and wayside exhibits, trail signs, and park brochures. The park will assess the need for additional locations and types of information to support the overall desired conditions of increasing recreation opportunities to visitors—resulting in a long-term, minor, beneficial impact.

In this alternative, only minimal changes will be made to the park's significant cultural sites and resources. Specifically, this alternative states that no light stations, other than Raspberry Island light station, will be rehabilitated for interpretation purposes. However, the cultural landscape of Raspberry Island light station would be partially or fully restored. The exteriors of the other light stations would be stabilized and nonpersonal and some staffed services would provide interpretation. The cultural landscapes in immediate proximity to the other light stations would be stabilized. This alternative would maintain a relatively similar level of personal services to what is currently provided—often by volunteers—during peak season at the other light stations. This alternative would not significantly change the opportunities to learn about the stories associated with the light stations. The improvements to Raspberry Island's cultural landscape and the stabilization of the other cultural landscapes in immediate proximity to the light stations would result in a long-term, minor, beneficial impact on the opportunity for visitors to understand the significant stories of the Apostle Islands.

In this alternative, several of the former use and occupancy/current life estates will be made available for visitor access and interpretation as the opportunity comes available. The Rocky Island, West Bay Club, Shaw Point and Hansen farm sites would have visitor access, including public use of the nearby docks (if applicable), and visitor interpretation with non personal and possibly some personal services. Further, historic roads would be reestablished as trails to connect the different cultural landscapes. These visitor access and interpretation opportunities would enhance visitors' exposure to and understanding of the human history on the islands in the park—resulting in a long-term, minor, beneficial impact.

Finally, the Manitou fish camp and cultural landscape would be rehabilitated. Additional interpretive services would be provided, allowing for increased interpretation of this

resource, resulting in a long-term, minor, beneficial impact.

Visitor Safety

This alternative includes a ranger station as part of the visitor contact station at Meyers Beach; this will increase NPS presence for visitor orientation and safety information dissemination, as well as improve response times to this area of the park. This will greatly improve visitor safety for a large number of visitors to the park—resulting in a long-term, moderate, beneficial impact.

The relocation of the visitor center in Bayfield to a more visible location will likely increase the number of park visitors that access the visitor center; therefore the ability of the National Park Service to distribute safety information would be greater—creating a long-term, moderate, beneficial impact. The improvements to the Little Sand Bay Visitor Center may slightly increase the amount of safety information that is effectively disseminated to park visitors who visit this area of the park, resulting in a long-term, minor, beneficial impact to visitor safety.

The rehabilitation of the Long Island light station for NPS housing will increase the NPS presence on Long Island, improving interpretation and visitor safety. This would result in a long-term, minor, beneficial impact.

This alternative also includes the proposal to relocate the Stockton Island – Presque Isle campground from the tombolo to Presque Isle, which will help reduce the interaction of visitors and bears on Stockton Island. This will improve visitor safety on Stockton Island, resulting in a long-term, minor, beneficial impact.

Finally, this alternative includes the possible provision of mooring buoys in selected high use bays. These buoys would provide a predictable place to tie a boat in storm events, increasing both real and perceived safety, resulting in a long-term, moderate, beneficial impact. However, there is also an increased

risk that boaters, without appropriate safety skills and knowledge, will rely on NPS-provided buoys and be otherwise unprepared for unsafe weather conditions; this could result in a long-term, moderate, adverse impact.

Cumulative Impacts. There are no actions or developments foreseen within or adjacent to the park that would likely affect visitor use and experience. There is the possibility of a slight increase in visitation or a change in visitor interests and demand due to potential changes in regional populations or national recreation trends. The likelihood of these changes is unknown at this time. If this were to occur, it may cause a slight increase in existing visitor use concerns such as crowding and conflicts at high use docks and attraction sites. Also, any significant effects from climate change could have a minor to major effect on visitor use and experiences. Of particular concern is the likely warmer water and longer seasons, punctuated by more severe and unpredictable storms, suggesting a long term adverse impact on visitor safety as more visitors are likely to be vulnerable to Lake Superior without adequate preparation. Other changes that could result in impacts include reduced access to infrastructure and alterations to wildlife watching and fishing opportunities as a result of habitat changes.

Conclusion. Alternative 4 includes minor to major beneficial impacts resulting from significantly enhanced access to the islands, increased recreational opportunities in specific areas on the islands and mainland and the preservation of natural quiet, solitude and primitive recreation throughout the majority of the park. This alternative would increase the structured recreation opportunities on both the islands and mainland, providing access to a greater diversity of visitors. Further, many of the former use and occupancy/current life estates would eventually be made available for visitor access and interpretation, increasing visitors' understanding of the human history on the islands. Finally, this alternative also includes the ranger station at Meyers Beach and

rehabilitation of the Long Island light station for NPS use, which would improve visitor education and safety in these areas. However, some of the proposals to increase visitor opportunities and facilities, including access to certain cultural sites, may increase existing site-specific adverse impacts such as crowding, conflicts and noise impacts. Further, any effects resulting from changes in population, recreational trends or climate change may result in additional minor to major adverse effects, but the ability to predict the type or intensity of these impacts is limited at this time.

PARK OPERATIONS

Analysis. Like all of the alternatives, the park's physical geography would pose an operational challenge in alternative 4. Depending on the location of the new maintenance/operations center, fragmentation of park staff and facilities would either be reduced or exacerbated—without knowing the location of this new facility it is not possible to analyze this impact. However, building a new ranger station at Meyers Beach, and relocating some administrative staff from Little Sand Bay to Bayfield would improve the effectiveness and efficiency of park staff, and increase their productivity. Although the separation of the park headquarters from the maintenance/operations facility and the Bayfield visitor center would still separate staff, overall compared to alternative 1 the improvements in alternative 4 would result in a long-term, beneficial impact on park operations.

Like alternatives 2 and 3, in alternative 4 several new actions and developments would occur, which would affect park operations. The construction of new facilities and trails (e.g., building an access ramp at Meyers Beach, completing the mainland lakeshore trail, moving the Stockton Island – Presque Isle campground to Presque Isle), and rehabilitation of existing facilities (e.g., rehabilitating the Manitou fish camp and

Long Island light station, restoration of the Hansen farm homestead building on Sand Island) under this alternative would require additional resources for operations and maintenance and additional efforts from maintenance, interpretation and resource management staff (as well as more staff). The annual installation and removal of mooring buoys in this alternative also could require additional staff expertise as well as new equipment. On the other hand, under alternative 4, the Little Sand Bay Visitor Center would be replaced with a smaller visitor center, which would slightly lower the demands on park staff (including funding, equipment, supplies, etc.). Overall, assuming additional funding and staff are provided as called for under the alternative, the additional facilities and actions in alternative 4 should have a moderate, long-term, adverse effect on park operations.

With several additional employees the park staff would be able to better achieve desired conditions in program areas such as resource protection, visitor services, wilderness management, cyclic maintenance, and the deferred maintenance backlog would likely decrease. This would have a long-term, beneficial impact on park operations.

Cumulative Impacts. No major new park projects and actions, independent of this plan, are expected over the life of this plan. Thus, no past, ongoing or foreseeable actions would combine with the actions proposed in alternative 4 that would result in cumulative park operations impacts.

Conclusion. Compared to alternative 1, alternative 4 would have a long-term, beneficial effect on park operations, due primarily to actions taken to improve park operational facilities, decrease staff fragmentation, and increase staffing levels. On the other hand, new developments and management actions in alternative 4 would require additional time and resources to initiate and maintain, resulting in a moderate, long-term, adverse effect on park operations. No cumulative effects on park operations

would be expected as a result of this alternative.

SOCIOECONOMIC ENVIRONMENT

Analysis. Alternative 4 would have many effects on the socioeconomic environment. Under this alternative there would be both increases in visitor spending and increases in park expenditures. As noted in the alternative there would be a number of new opportunities on the islands for visitors (e.g., the development of trails and campsites on Sand, Oak, and Basswood islands, the extension of the mainland lakeshore trail, new mainland camping opportunities, perhaps an increase in the number of dispersed wilderness campsites). And building a new visitor center on the Bayfield waterfront would attract more visitors to this facility. As a result, more visitors would likely go to the islands and spend time on the mainland unit and at the mainland visitor center. Consequently, more visitors would spend a longer time in the area. This would result in a minor, long-term, benefit to local businesses, including water taxis that transport people to the islands, guides, outfitters, and other businesses that provide services and goods to visitors. A new visitor facility located closer to the business in Bayfield also would benefit businesses located near the facility. The impact would be a long-term, beneficial impact to the socioeconomic environment.

As noted in the alternative description, the National Park Service would be spending additional funds on construction and maintenance of facilities. This would in turn have a long-term, beneficial impact on businesses that supply materials and services to the park, including local merchants, utilities, equipment suppliers, and contractors. Construction businesses would receive short-term benefits from the development of facilities in the alternative, such as the new visitor center. (How much the local economy actually would benefit would depend upon the degree to which park needs can be fulfilled within and by local businesses.) Hiring

additional park staff under the alternative would also result in these individuals spending their income for housing, food, entertainment, and other services and goods, which in turn would increase revenues for local businesses. In addition, local governments would collect more tax revenues as a result of both visitor spending and park spending in the area. As in all of the alternatives, under alternative 4 the park would continue to be an important attraction for many residents and for people considering relocation to the region, although the alternative would not be expected to cause major changes in the regional population. There would be more demands on mainland community services (e.g., water and sewer systems, local law enforcement) with visitors spending more time in the area, compared to alternative 1, but levels would not be expected to increase to a level that would substantially change park-related demands on community services and facilities.

Cumulative Impacts. No ongoing or new park projects, independent of this plan, or other actions outside the park (e.g., new recreational developments, changes in land ownership, management of adjacent lands) that would affect the park are expected over the life of this plan. Thus, no ongoing or foreseeable actions would combine with the actions proposed in alternative 4 that would result in cumulative socioeconomic impacts.

Conclusion. Under alternative 4 there would likely be increased spending by visitors, with more visitors spending more time in the area, increased spending by the park, and increased spending by new park employees. These changes, however, would be relatively small compared to the overall regional economy and would not be expected to change the character of the social and economic environment. Most of the benefits of the alternative would occur in the Bayfield area. Compared to the no-action alternative, alternative 4 would result in a long-term, beneficial impact. The effects of alternative 4, in combination with the potential beneficial socioeconomic impacts of future residential developments adjacent to portions of the

mainland unit, could result in a long-term, beneficial cumulative impact to the socioeconomic environment.

UNAVOIDABLE ADVERSE IMPACTS

Under alternative 4, some soils and vegetation would be lost or altered due to construction of new facilities on the islands and mainland and due to visitor use in developed and high use areas. This would include bank erosion, and trampling of vegetation on sandscapes. Some docks would continue to alter coastal processes. Visitors and construction activities also may inadvertently contribute to the introduction and spread of nonnative species and to water pollution in localized areas.

There would be loss or alteration of some wildlife habitat (and wildlife in those areas) due to construction and use of new facilities, and increased visitor use in some areas may adversely affect wildlife in those areas. Short- and long-term adverse impacts to the natural soundscape would occur due to facility construction, visitor use, and NPS maintenance activities, primarily in high-use areas and during high-use periods (e.g., summer weekends). Construction of some visitor facilities, such as the new campground on Presque Isle, would result in unavoidable impacts to visitors due to temporarily restricted access and visual intrusions. Some repeat visitors experience would be adversely affected by the relocation of the Stockton Island – Presque Isle campground to Presque Isle and the potential relocation or realignment of some wilderness campsites. Crowding and congestion at high use areas (e.g., docks) would occur during the summer, adversely affecting some visitors' experiences. Education, interpretation, and outreach efforts would help minimize, but not eliminate, the likelihood of the above impacts.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

New actions would be taken in alternative 4 that would result in the consumption of

nonrenewable natural resources, and in the use of renewable resources that would preclude other uses for a period. In the construction of new facilities, including buildings and trails, limited amounts of nonrenewable resources would be used and there would be a loss of vegetative productivity and wildlife habitat for as long as these facilities remain. These resources would be essentially irretrievable once they were committed. In addition, because it takes so long for soils to form, the loss of soils due to the construction of new facilities, visitor use in localized areas, and erosion of soil in places within Apostle Islands National Lakeshore would be an irreversible commitment of resources.

THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

As in all of the alternatives, the National Park Service would continue to manage the park to

maintain ecological processes and native biological communities and to provide appropriate recreational opportunities consistent with preservation of cultural and natural resources. The vast majority of Apostle Islands National Lakeshore would continue to be protected in its current, relatively natural state and would maintain its long-term productivity. The primary short-term uses of the park would continue to be recreational use. Under alternative 4 there would be expanded (but still relatively modest) development to support recreational use and park operations, resulting in some localized loss of ecological productivity. Adverse impacts on the area's soils, water quality, vegetation, and wildlife due to visitor use also could reduce the productivity of natural resources in localized areas over time, although overall no measurable effect on the park's long-term productivity would be expected. On the other hand, efforts to restore native vegetation would increase long-term productivity of the environment in localized area.



**CHAPTER 6:
CONSULTATION
AND COORDINATION**



PUBLIC AND AGENCY INVOLVEMENT

The *Apostle Islands National Park General Management Plan / Wilderness Management Plan / Environmental Impact Statement* represents thoughts of the National Park Service (NPS) planning team, park staff, American Indian groups, different government agencies, and the public through invited comments and the application of ideas. The process of consultation and coordination was vitally important throughout this planning project. The public had three primary avenues by which it participated during the development of the plan: participation in public meetings, responses to newsletters, and comments submitted by regular mail and electronically through the NPS planning website.

PUBLIC MEETINGS AND NEWSLETTERS

Public meetings and newsletters were used to keep the public informed and involved in the planning process. A mailing list was compiled of members of governmental agencies, tribes, organizations, businesses, legislators, local governments, and interested citizens. Comments and suggestions offered by participants have provided NPS planners with important insights about what visitors, neighbors, officials, and others expect from the general management plan / wilderness management plan.

The notice of intent to prepare an environmental impact statement was published in the *Federal Register* on September 3, 2004 (Volume 69, Number 171, Page 53942). A subsequent notice of intent appeared in the *Federal Register* on May 31, 2005 (Volume 70, Number 103, Page 30972), indicating that the requirements of a wilderness management plan would be incorporated into the general management plan because Congress officially

designated wilderness within the park's boundaries on December 8, 2004.

Public Scoping Meetings

Five public open houses with brief presentations were held during October 2004 in different locations: in the Wisconsin municipalities of Bayfield, Ashland, and Madison, and in St. Paul and Duluth, Minnesota. Eight similar meetings were held during August 2006 at the visitor center on Presque Isle on Stockton Island and in Red Cliff, Bayfield, Odanah, Ashland, and Madison, Wisconsin, as well as in Bloomington and Hermantown, Minnesota. About 40 people attended the first set of public meetings, and about 150 people attended the second set. The meetings in Red Cliff and Odanah are referred to in the section below on American Indian consultations because they represent communities, respectively, on the reservations of the Red Cliff Band and Bad River Band of Lake Superior Chippewa Indians.

Newsletters

The National Park Service issued two newsletters between 2004 and 2006 during preparation of the draft plan. Overall, members of the public predominantly valued the scenic beauty of the views from and around the islands. The total number of people who responded to these newsletters was 427. In addition, the total number of organizations responding was 20 including municipalities. These figures include comment forms that were mailed back, letters that people initiated, and comments about the plan submitted by electronic mail or online through the NPS planning website at <http://parkplanning.nps.gov/apis/>.

Newsletter #1, issued during October 2004, described the process of general management

planning and invited comments on identifying the special characteristics of Apostle Islands National Lakeshore. Thirty-one people and nine organizations commented.

Newsletter #2, issued during August 2006, sought comments on proposed options for future management considerations. Some 376 people and 11 organizations responded.

Scoping within the National Park Service

Meetings were held with Apostle Islands National Lakeshore staff members during October 2004, May 2005, February 2006, and January 2007.

CONSULTATION WITH OTHER AGENCIES/OFFICIALS AND ORGANIZATIONS

U.S. Fish and Wildlife Service, Section 7 Consultation

The Endangered Species Act of 1973, as amended, requires in Section 7(a)(2) that each federal agency, in consultation with the secretary of the interior, ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. During the preparation of this plan, NPS staff coordinated informally with the U.S. Fish and Wildlife Service's Green Bay office. A list of threatened and endangered species for Bayfield and Ashland counties was compiled using the U.S. Fish and Wildlife Service's website that can be accessed at <http://www.fws.gov/midwest/Endangered/lists/wisc-cty.html>.

In accordance with the Endangered Species Act and relevant regulations at 50 CFR Part 402, the National Park Service determined that this *Final General Management Plan / Wilderness Management Plan* is not likely to adversely affect any federal threatened or endangered species, and sent a copy of the draft plan to the U.S. Fish and Wildlife Service

with a request for written concurrence with that determination.

In addition, the National Park Service has committed to consult on future actions conducted under the framework described in this management plan to ensure that future actions are not likely to adversely affect threatened or endangered species.

Section 106 Consultation

Agencies that have direct or indirect jurisdiction over historic properties are required by Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470, et seq.), to take into account the effect of any undertaking on properties listed in or eligible for listing in the National Register of Historic Places. To meet the requirements of 36 CFR 800, on October 27, 2004, the National Park Service sent a letter to the Wisconsin state historic preservation office and to the Advisory Council on Historic Preservation presenting opportunities to participate in the planning process. Throughout the planning process, each office was informed of opportunities to attend agency and public meetings and afforded the opportunity to review and comment on the newsletters. These officials also received a copy of the draft plan for review and comment; a copy of the state historical preservation office's response letter is included in appendix F. Affiliated tribal representatives were also consulted, in fulfillment of Section 106 requirements. (See "Consultation with American Indians" section below.)

Table 16 (in the next section) shows the NPS determinations for additional consultations with the Wisconsin state historic preservation office and, if necessary, the Advisory Council on Historic Preservation under Section 106.

Coastal Zone Consistency Determination

Federal agency activities in or affecting Wisconsin's coastal zone must comply with section 307 of the Coastal Zone Management Act and implementing regulations, which

require that such federal activities be conducted in a manner consistent to the maximum extent practicable with Wisconsin's Coastal Management Program.

Although all of Apostle Islands National Lakeshore is federal land and excluded from Wisconsin's coastal zone, the park is geographically within the coastal zone. The National Park Service has determined that the preferred alternative described in this document is consistent with Wisconsin's Coastal Management Program, including the state's goals and policies for this area.

This *Final General Management Plan / Wilderness Study / Environmental Impact Statement* provides the substantive basis for the National Park Service's consistency determination and has submitted this document to the Wisconsin Coastal Management Council for its concurrence. In its response to the draft plan, the Wisconsin Coastal Management Program noted it did not conduct a formal federal consistency review, but had no comments on the plan (see appendix F). Thus, the National Park Service assumes that the state does not have any issues with the plan from a coastal zone standpoint.

OTHER FEDERAL AND STATE AGENCIES, REGIONAL AND LOCAL GOVERNMENTS, AND PARTNER ORGANIZATIONS

Apostle Islands National Lakeshore staff meet from time to time with representatives of federal and state agencies and regional and local governments (as appropriate) on topics of mutual interest and concern, such as operating the park, preserving its resources, and making it safe and enjoyable for visitors. These entities were informed of the commencement of the general management plan / wilderness management plan, and discussion topics and planning issues were welcomed, but no meetings solely focused on the plan were held with these entities. The same can be said about any special interest groups whose interests include the park or

aspects of the park. There were no official partners specifically identified for planning staff to meet with about the general management plan / wilderness management plan; however, the Friends of Apostle Islands National Lakeshore specifically invited its members to attend one public meeting. The park staff has held meetings with this group about many things, not simply the general management plan / wilderness management plan.

The Town of Russell requested cooperating agency status, in accordance with 40 CFR section 1501.6, well after the release of the draft general management plan / environmental impact statement. The request was not granted because of the lateness of the request. By granting the request, the Town of Russell would not have had any additional influence over the decisions left to be made in the GMP process.

After the draft plan was published, NPS staff held meetings with the Bayfield city council (October 12, 2009), the superintendent of the Bayfield school district (December 4, 2009), the chair of the Town of Russell (March 22, 2010), and the Bayfield Heritage Association (April 6, 2010). These meetings were informational in nature and intended to answer questions from the organizations.

CONSULTATION WITH AMERICAN INDIANS

The Chippewa/Ojibwe Indian people traditionally occupied vast lands that ranged from both shores of Lakes Superior and Huron in the east to the North Dakota area in the west. The Chippewa/Ojibwe hunted, fished, gathered wild rice and various fruits, and engaged in some horticulture. The descendant entity today is the Lake Superior Tribe of Chippewa/Ojibwe Indians with different Chippewa/Ojibwe bands as independent tribal governments in what are now Wisconsin, Michigan, and Minnesota.

Traditionally associated with the area now containing the park, the following federally recognized American Indian tribes were invited by letters, dated October 27, 2004, and August 23, 2006, to meet for government-to-government American Indian consultations about the general management plan / wilderness management plan:

Bad River Band of the Lake Superior Tribe of Chippewa Indians, Wisconsin

Bay Mills [Chippewa/Ojibwe] Indian Community, Michigan

Fond du Lac Chippewa Tribe, Minnesota

Keweenaw Bay Indian Community of the Lake Superior Tribe of Chippewa/Ojibwe Indians, Michigan

Lac Courte Oreilles Ojibwe Tribe, Wisconsin

Lac Du Flambeau Band of the Lake Superior Tribe of Chippewa/Ojibwe Indians, Wisconsin

Lac Vieux Desert Band of the Lake Superior Tribe of Chippewa/Ojibwe Indians, Michigan

Mille Lacs Ojibwe Tribe, Minnesota

Red Cliff Band of the Lake Superior Tribe of Chippewa Indians, Wisconsin

Sokogon Chippewa Community, Wisconsin

St. Croix Chippewa Tribe, Wisconsin

(A representative copy of one of these letters is included in appendix E.)

NPS staff subsequently held one tribal consultation meeting after the draft plan was published. A meeting was held with the Red

Cliff Band on November 23, 2009. The Red Cliff Band provided comments on the draft plan, and their comment letter is included in appendix F.

Because the Apostle Islands region is in the heart of the ancestral homeland of the Chippewa/Ojibwe people, the area's significance to Chippewa/Ojibwe traditions and culture cannot be overstated. Chippewa/Ojibwe treaty rights will continue to be honored. None of the proposed actions being considered in this *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement* would impede, prevent, or in any way negate treaty rights. The options being proposed here will not, and indeed cannot, affect the harvesting of plants or plant materials, hunting, fishing (including commercial fishing in Lake Superior), or trapping rights (although with appropriate consultation with affected tribal governments it might affect the manner in which treaty rights are exercised). For Apostle Islands National Lakeshore, these rights are reserved for the tribes and guaranteed by the United States of America in the Treaties of 1842 and 1854, and these rights have been affirmed in a number of court cases, including *State of Wisconsin v. Gurnoe* and *Lac Courte Oreilles Band of Chippewa Indians v. Voigt*. In addition, for those portions of the park that lie within the boundaries of their reservations, the Red Cliff Band of Lake Superior Chippewa/Ojibwe Indians of Wisconsin and the Bad River Band of the Lake Superior Tribe of Chippewa/Ojibwe Indians of Wisconsin enjoy a number of other rights of self-governance and self-determination that are reserved and protected in the Treaty of 1854 and other federal enactments.

FUTURE COMPLIANCE REQUIREMENTS

In the table below, specific undertakings found in the preferred alternative are listed. Associated compliance requirements are also listed.

Table 16: Future Resource Compliance Required for Implementation of the Preferred Alternative

Action	Section 106 Compliance Requirements
Continued nomination of eligible historic properties, including historic structures, cultural landscapes, and archeological sites, to the National Register of Historic Places. An example is the August 2008 national register listing of a fish camp as the Rocky Island National Historic District.	Wisconsin state historic preservation office and tribal historic preservation office concurrence would be sought concerning individual historic property determinations of national register eligibility.
Actions to preserve, restore, or rehabilitate park historic properties for adaptive use, interpretation, or other purposes.	Wisconsin state historic preservation office and tribal historic preservation office review would likely be necessary at the planning and/or design stages of project implementation.
Action	Other Compliance Requirements
Facility development that potentially could affect the habitat of the piping plover.	Consult with the U.S. Fish and Wildlife Service for threatened and endangered species as required under the Endangered Species Act.
New site-specific developments and management actions.	Prepare appropriate National Environmental Policy Act (NEPA) documentation.
Construction or renovation of docks that affect waters of the United States.	Obtain a section 10 permit from the U. S. Army Corps of Engineers under the Rivers and Harbors Act, a section 404 permit under the Clean Waters Act, and a Wisconsin Department of Natural Resources permit.

PUBLIC OFFICIALS, AGENCIES, AND ORGANIZATIONS RECEIVING A COPY OF THIS DOCUMENT

The National Park Service circulated the *Draft General Management Plan / Wilderness Management Plan / Environmental Impact Statement* to the agencies and organizations listed below. A limited number of copies of the plan were made available upon request by interested individuals. Copies of the document were also available for review at the park and on the NPS planning website at <http://parkplanning.nps.gov/apis/>

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Army Corps of Engineers, St Paul District
The Great Lakes Commission
Natural Resource Conservation Service
Northern Great Lakes Visitor Center
U.S. Department of Agriculture (USDA)
 Forest Service
 Chequamegon-Nicolet
 National Forests
USDA Office of General Counsel
U.S. Department of the Interior
 Bureau of Indian Affairs
 National Park Service
 Grand Portage National Monument
 Ice Age and North Country National
 Scenic Trails
 Keweenaw National Historical Park
 Indiana Dunes National Lakeshore
 Isle Royale National Park
 NPS Midwest Archaeological Center
 Pictured Rocks National Lakeshore
 Saint Croix National Scenic Riverway
 Sleeping Bear Dunes National
 Lakeshore
 Voyageurs National Park

U.S. Coast Guard – Duluth
 ALDER
 Marine Safety Office
U.S. Fish and Wildlife Service, Endangered
 Species Field Office, Green Bay
U.S. Environmental Protection Agency,
 Region 5
U.S. Environmental Protection Agency, Great
 Lakes National Program Office

CONGRESSIONAL DELEGATION

Representative David Obey
Senator Russell Feingold
Senator Herb Kohl

AMERICAN INDIAN TRIBES AND AGENCIES

Chippewa Indian Bands
 Lac du Flambeau
 Lac Vieux Desert
 Lac Courte Oreilles
 Bad River
 Bay Mills
 Bois Forte
 Bois Forte Reservation Business
 Committee
 Fond du Lac
 Grand Portage
 Keweenaw Bay
 Mille Lacs
 Mole Lake
 Red Cliff
 Red Cliff Natural Resources Committee
 St. Croix
 Sokaogon Chippewa Community,
 Wisconsin
Voigt Intertribal Task Force
Great Lakes Indian Fish and Wildlife
 Commission

STATE OF WISCONSIN AGENCIES

Department of Natural Resources
Office of the Secretary, Madison
Regional Director, Spooner
Water Team Leader, Lake Superior Basin,
Superior
Brule River State Forest
Big Bay State Park
Department of Tourism
Natural Resources Board
Northwest Regional Planning Commission
Office of the Governor
Governor's Office
Governor's Northern Office
State Historical Preservation Office
University of Wisconsin
Sea Grant Program
Wisconsin Historical Society
Wisconsin Coastal Management Program

STATE AND LOCAL ELECTED OFFICIALS

Mayor of Ashland
Mayor of Bayfield
Mayor of Washburn
Representative Gary Sherman
Senator Bob Jauch

LOCAL AND REGIONAL GOVERNMENT AGENCIES

Ashland County Board of Supervisors
Bayfield County Board of Supervisors
Bayfield County Forest Administrator
Bayfield County Forestry Department
City of Ashland
City of Bayfield
City of Washburn
Northwest Regional Planning Commission
Town of Bayfield
Town of Bell
Town of LaPointe
Town of Russell
Town of Sanborn

ORGANIZATIONS AND BUSINESSES

Adventures in Perspective (Living Adventure)
Alliance for Sustainability
American Lands Alliance, Upper Midwest
American Lighthouse Foundation
Animaashi Sailing Company
Apostle Islands Cruises
Apostle Islands Marina
Apple Hill Orchard
Ashland Chamber of Commerce
Ashland Marina
Association of Wisconsin Snowmobile Clubs
Audubon Center of the North Woods
Bayfield Chamber of Commerce
Bayfield Heritage Association
Bayfield Yacht Club
Bodin Fisheries
Bruce River Canoe Rental
Camp Amnicon
Camp Manitowish
Camp Voyageur
Center for Environmental Studies
Catchun-Sun Charter Co.
Chequamegon Adventure Company
Chequamegon Audubon Society
Chequamegon Democratic Party
Citizens Against AI Wilderness
Duluth Power Squadron
The Ecotopian Society
Friends of the Boundary Waters Wilderness
Glacier Valley Wilderness Adventures
Great Lakes Cruising Club
Great Lakes Lighthouse Keepers Association
Great Lakes Sport Fishing Council
Howard County Bird Club
Izaak Walton League
The League of Women Voters
Madeline Island Chamber of Commerce
National Audubon Society
National Park Foundation
National Parks Conservation Association
National Trust for Historic Preservation

National Wildlife Federation
Natural Resource Research Institute
The Nature Conservancy
Northland College
NW Passage Outing Club, Inc.
The Outdoor Network
Perkins Coie
Public Employees for Environmental
Responsibility (PEER)
Pikes Bay Marina
Pikes Creek Keel Club
Port Superior Marina
Red Cliff Marina
Roberta's Charters
Roys Point Partners
Sailboats, Inc.
Save Lake Superior Association
Schooner Bay Marina
Sierra Club
Midwest Office
John Muir Chapter
Sigurd Olson Environmental Institute
Siskiwit Bay Marina
Superior Charters, Inc.
Superior Sailor
SWCA Environmental Consultants
Trek and Trail
University of Minnesota
Voyageur Outward Bound School
Washburn Chamber of Commerce
Washburn Marina
Wilderness Inquiry
The Wilderness Society
Wisconsin Indianhead Technical College
Wisconsin Lighthouse District

LIBRARIES

Ashland Public Library
Bayfield Carnegie Library
Duluth Public Library
University of Minnesota, Forestry Library
University of Wisconsin, Madison (Steenbock
Library)
Vaughn Public Library
Washburn Public Library

MEDIA

County Journal
The Daily Press
Duluth News-Tribune
Ironwood Daily Globe
The Journal
The Journal Times
KADL Radio
KDLH TV Duluth
KBJR TV Duluth
Lake Superior Magazine
Madison Capitol Times
Milwaukee Journal Sentinel
Minneapolis Star Tribune
The Outdoor Network
St. Paul Pioneer Press
Superior Evening Telegram
WATW (AM 1400)
WDIO TV, Duluth
WDSE TV, Duluth
WEGZ Eagle 106
Wisconsin Public Radio

INDIVIDUALS

The list of individuals is available from park headquarters.

PUBLIC COMMENTS ON THE DRAFT GENERAL MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT WITH AGENCY RESPONSES

This section includes a summary of comments received through letters, e-mail messages, and public meetings following the release of the *Draft General Management Plan/Wilderness Management Plan/Environmental Impact Statement* on August 17, 2009. All oral and written comments were considered during the preparation of the Final Environmental Impact Statement according to the requirements of 40 CFR 1503. The comments allow the study team, NPS decision-makers, and other interested parties to review and assess the views of other agencies, organizations, and individuals regarding the preferred alternative, the other alternatives, and their potential impacts. *It is important to stress that the selection of the preferred alternative and any revisions to the alternative were not based solely on how many people supported a particular alternative.*

The section begins with summaries of the public meetings and written comments. Next, responses are included for all substantive comments. Comment letters from all federal, state, and local agencies and private organizations that specifically addressed the substantive issues are included in appendix F.

The Council on Environmental Quality guidelines (1978) for implementing the National Environmental Policy Act requires the National Park Service to respond to “substantive comments.” A comment is substantive if it meets any of the following criteria from Director’s Order 12, “Conservation Planning, Environmental Impact Analysis and Decision Making” (NPS 2001).

- It questions, with reasonable basis, the accuracy of information.

- It questions, with reasonable basis, the adequacy of environmental analysis.
- It presented reasonable alternatives other than those proposed in the environmental impact statement.
- It would cause changes or revisions in the preferred alternative.

Most comments from individuals expressed opinions about the preferred alternative and therefore were not responded to or reproduced in this document. A complete record of individuals who received copies of the draft document and of comments received on the draft document, including copies of all letters and e-mail messages, is on file at the park headquarters. People wishing to review the comment letters and e-mail messages should contact the park’s chief of planning and resource management, 415 Washington Ave, Bayfield, WI 54814; tel.:(715) 779-3398, ext 102.)

RECORD OF PUBLIC COMMENT

A notice of availability of the draft document was published in the *Federal Register* on September 2, 2009 (74 FR 45467-445468). Approximately 250 copies of the draft were distributed to government agencies, public interest groups, businesses, media, local libraries, and individuals. The document was also posted on the NPS planning web site for review.

The public comment period closed on October 23, 2009. In addition, eight public meetings were held in August and September to solicit public input.

SUMMARY OF PUBLIC MEETINGS

Eight public open houses were held in the region: Red Cliff (August 31, 2009), Bayfield (August 31), Superior (September 1), Twin Cities (September 2), Madison (September 3), Stockton Island in the park (September 4), Odanah (September 8), and Ashland (September 8). A total of 125 people attended the open houses. The open houses were primarily informational in nature, intended to provide opportunities for the public to meet members of the NPS planning team, learn about the plan, and answer questions. Attendees were encouraged to provide comments in writing to the planning team.

SUMMARY OF WRITTEN COMMENTS

The planning team received 71 letters and 91 e-mail messages (although some e-mails were duplicates of letters received) during the comment period. Of the 162 comments received, 4 were from federal agencies, 3 were from state agencies, 2 were from local governments, and 11 were from special interest groups. All of the other comments were from individuals and businesses. Comments were received from across the country, but most came from the Midwest and specifically Wisconsin.

AGENCY RESPONSES TO COMMENTS

The following 14 concerns are the substantive issues that surfaced during the public comment period. The specific letters and internet comments that addressed these concerns are identified with each concern and can be found in appendix F. This is not a complete inventory of all the comments received; it includes only those that addressed the substantive issues. All comments, whether addressing these 14 issues or not, are in the record file at Apostle Islands National Lakeshore, Route 1, Box 4, Bayfield, WI 54814-9599.

Concern 1: The proposed expansion of the Lakeshore Trail between Little Sand Bay and the Sand River would increase use and negatively impact resources in the area.

(see appendix F: letters 5 and 23; internet comments 11, 72, and 87)

After considering the potential impacts and cost of extending the trail, and the concerns expressed by adjacent landowners, we have revised the preferred alternative to eliminate the proposed expansion. The existing Lakeshore Trail would continue to be maintained, and a short loop trail would still be created in the Little Sand Bay area.

Concern 2: The National Park Service cannot effectively preserve the park's many historic buildings, structures, and heritage/stories without the assistance of partnership organizations, volunteers, and those with historic use/family connections to life estate properties.

(see appendix F: letters 10, 15, 17, 18, 19, 20, 31, 32, 35, 36, 43, 45, 46, 47, 49, 50, 52, 53, 54, and 58; internet comments 45, 72, 78, 79, 83, and 90)

We appreciate the value of partnerships in managing the park for the public interest, and have worked with a variety of organizations in the past and will continue to do so in the future. As noted on page 18 of the draft document, we will continue to establish and foster partnerships with public and private organizations to achieve the public purposes of the park. We will work with others to maintain historically significant properties to the extent it serves the public interest. However, partnerships are not the only way to effectively and efficiently manage and preserve park resources, as is currently being demonstrated at the Hansen farm on Sand Island.

Some of the families with life estate properties have suggested extending exclusive use of the properties beyond their current arrangements.

The former owners of these properties within the park were fairly compensated when they sold their cabins to the National Park Service, and we respect the rights of the remaining life estate holders to exclusive non-commercial residential use of these sites for the rest of their lives. The general management plan lays out a vision for preservation and public access to the historic and non-historic elements of these properties upon the expiration of the life estates. The National Park Service will not consider extension of the life estates, nor non-competitive preferential access to these properties after the expiration of the existing legal arrangements.

Historic leasing regulations under 36 CFR 18.4 require that any such “lease will not deprive the park area of property necessary for appropriate park protection, interpretation, [or] visitor enjoyment.” As the general management plan clearly indicates the value of the historically-significant properties for public use, historic leasing will not be considered for these sites.

We will consider a variety of ways of implementing the general management plan direction for historic properties at the appropriate time, including partnerships, but it is premature at this time to identify the specific means of accomplishing those objectives given that the likely long period of time that the life estate holders are entitled to continue in the current arrangements.

Concern 3: The Bayfield visitor center will be closed to public access under the preferred alternative, when substantial funding for the building’s renovation had been raised by the local community for public use.

(see appendix F: letters 9, 10, 25, 26, 27, 32, 43, 44, and 50; internet comments 26, 53, 64, 72, and 90)

We appreciate the importance of the existing Bayfield visitor center to the community. It

should be noted that most of the existing building now has restricted public use. Although in the preferred alternative the visitor center would be moved to a new location, we want to assure residents that the building would not be totally closed to public use—some level of public access would continue under the preferred alternative. These details would be worked out in the design of the building renovation.

Concern 4: Transfer of historic objects and archives that were donated by the community to an outside repository would curtail continued access to significant items of local heritage, and limit the ability to use these for local interpretive and research purposes.

(see appendix F: letters 9, 10, 17, 18, 20, 25, 26, 27, 31, 32, 34, 43, 48, 49, 50, 51, 52, and 58; internet comments 40, 43, 47, 53, 58, and 90)

Congress has directed that the National Park Service improve the storage and curation of historic objects and archives by consolidating the number of independent repositories. Funding to upgrade the existing inadequate Apostle Islands museum storage facility is not an option we were able to consider within the general management plan.

Museum objects that are on public exhibit will remain in the park and therefore were not considered in the general management plan. Similarly, park archives (primary source records) have not been considered for transfer to another location out of the area. This has been made clearer in the final document.

The remainder of the park’s collection is currently in long-term storage, inaccessible to the public, in an inadequate facility. To protect these objects, they must be moved to a facility which will meet professional museum quality standards. The National Park Service, independent of the Apostle Islands *General Management Plan*, plans to construct such a

facility at Keweenaw National Historical Park. Recognizing the importance of much of the park's collection to the Apostle Islands community, we will explore the feasibility of alternative arrangements for local storage, curation, and access of some or all of the collection if suitable partnership opportunities are identified that meet NPS preservation, protection and access standards at no additional cost to the National Park Service. We have revised the text in the final plan to make this clear.

Concern 5: Educational and interpretive activities would not be permitted in designated wilderness, which would adversely affect school programs and activities.

(see appendix F: letters 10, 18, 32, and 49; internet comments 83 and 87)

Education can be a very appropriate activity within wilderness, and we did not intend to limit all educational activities in wilderness. Based on feedback received from local educators, we have revised the text to note that educational and interpretive activities that are consistent with the maintenance of wilderness character may be permitted in the wilderness area. NPS staff would work closely with local educators to develop appropriate curricula and identify appropriate activities in the wilderness.

Concern 6: The Stockton Island campsites are some of the premier campsites in the park. Relocating the Stockton Island campsites to Presque Isle would not offer many of the amenities of the existing campsites and they would be less accessible. Other solutions exist to address the existing erosion problems.

(see appendix F: letters 16, 21, 22, 24, 28, 29, 37, and 42; internet comments 9, 21, 25, 27, 29, 31, 32, 44, 49, 55, 56, 57, 60, 62, 65, 66, 68, 69, 70, 73, 74, 76, 80, 81, and 89)

We appreciate the strong interest in retaining the Stockton Island campsites. We also recognize there are major resource concerns with these campsites, such as the high potential for bear-visitor conflicts, shoreline erosion, and associated impacts to archeological sites. To partially address these concerns and the concerns expressed by the public, we have revised the preferred alternative to keep 4-6 of the Stockton Island campsites at the north end, and move the others to Presque Isle. The final document emphasizes that the new Presque Isle campsites would be designed to have the same or better amenities than the Stockton Island campsites they will replace, and they would be located no farther from the dock than the existing campsites. Many would be shoreline sites with equally good views as the campsites they are replacing. Before any campsites are relocated, additional studies would be done and a detailed site design/environmental compliance document would be prepared. We would seek additional public input in this future planning effort to ensure that the public's views are taken into account in designing and locating high quality campsites.

Concern 7: Relocating the Oak Island group campsite to another site on the island would not provide the same amenities and would not be as accessible to kayakers.

(see appendix F: letters 21 and 42; internet comments 14, 20, 21, 22, 24, 25, 27, 29, 31, 46, 49, 55, 57, 59, 65, 66, 71, 74, and 87)

The existing group campsite is located in designated wilderness, and on an important cultural resource site. Groups of up to 20 individuals use this campsite, which may interfere with opportunities for others to find solitude in the area, as required by the Wilderness Act. Thus, the group campsite needs to be moved. We believe there are other locations on Oak Island, in the nonwilderness area, that have beach access, can provide a similar experience as the existing group campsite, and can accommodate large groups

of kayaks. (We would also point out that that the existing individual campsite on the spit would continue to be available for public use.) A detailed site design/environmental compliance document would be prepared before the group campsite is relocated. We would seek additional public input in this future planning effort to ensure that the public's views are taken into account in designing and locating a high quality group campsite.

Concern 8: It does not seem cost-effective to construct new facilities and visitor centers when many existing facilities and historic properties should be restored and maintained. In particular, there is concern about the loss of the docks and facilities at Little Sand Bay.

(see appendix F: letters 10, 14, 17, 18, 19, 20, 31, 32, 33, 39, 40, 41, 42, 43, 47, 49, 50, 51, 52, 55, 56, 57, and 58; internet comments 36, 49, and 89)

We share the concern about saving taxpayer money and the need to ensure that the park's existing facilities are maintained. It should be noted that this general management plan is a 15-20 year plan, and that the plan does not guarantee the availability of funding for the construction of new facilities. Since the plan is not an approved budget, individual components of the plan are not in competition with each other. Funding for a visitor center does not preclude funding for a dock restoration, or vice versa.

Although construction of a new visitor center in Bayfield would be expensive, we believe, as do many others, that such a facility would provide many benefits to park visitors and the community. Although some have argued we should expand our presence in the existing Northern Great Lakes Visitor Center rather than build a new visitor center, we do not believe the two facilities are comparable. The Northern Great Lakes Visitor Center's focus is on the region, not just the park, and is too

remote relative to departure points to the islands to serve as the park's primary visitor center.

As noted in chapter 1, the future of the park's operation facilities at Roys Point is unclear. These facilities are leased, with over \$400,000 per year paid in rent. There is no certainty that the lease will always be renewed. In addition, we cannot make the facilities more energy efficient due to landlord disinterest.

With regard to the Little Sand Bay facilities, the existing visitor center has reached the end of its useful life, despite its storied past. It no longer makes sense to invest in a never-ending stream of repairs and to try to improve it to meet modern building codes when the basic systems and structure are failing. It is more cost-effective to replace the visitor center with a new facility, which would provide services comparable to what is now provided in the area. The new facility will not result in a reduction of visitor services—in fact, services are likely to be improved due to the more efficient use of space and lower operating costs. We have revised the text in the final document to clarify this point. The planned construction of a new loop trail and day use area will expand visitor opportunities in the area, and dock improvements are already in the works for Little Sand Bay independent of the general management plan.

Concern 9: There was inadequate consultation with local town, county, and tribal officials during this planning effort, given the major changes being proposed in the plan.

(see appendix F: letter 14; internet comments 77 and 86)

As noted on page 323 of the draft document, we considered consultation and coordination to be vitally important throughout the planning effort. We made many efforts to inform and meet with local, regional, and tribal entities, as noted on pages 325-326 of

the draft document. Officials received copies of planning materials at each stage of the planning process, and were informed of their opportunities to provide input on draft documents. The National Park Service has continued to meet with local and tribal representatives even as the final document was being prepared (see pages 331-332 for consultation meetings that were held after the draft plan was published).

Concern 10: Providing increased access and NPS-operated public shuttle boats to the inner islands would lead to overcrowding and eventual commercialization, diminishing the wilderness experience of visitors and interfering with kayakers.

(see appendix F: internet comments 19, 21, 22, 24, 27, 29, 30, 31, 32, 33, 34, 36, 39, 41, 42, 55, 57, 64, 66, 67, 74, and 77; no letters addressed this concern)

We are not proposing NPS-operated public shuttle boats. Rather, we would seek a private entity(ies) to provide this service, probably under a concession contract, if it can be done cost-effectively. As noted on pages 123-124 of the draft document, only a small amount of new infrastructure would be provided on the islands to accommodate this use, such as vault toilets and picnic tables in day use areas. This development is consistent with how the islands were zoned under the preferred alternative. We do not see this as “commercializing” the islands—nor would we permit such development to occur. With regard to diminishing the wilderness experience, the two islands where these shuttle boats would likely visit, Sand and Basswood Islands, are not within the wilderness area. Thus, increased use of these islands would not affect the wilderness experience of visitors. Finally, we would expect a small number of shuttles to visit a small number of islands on a daily basis. Compared to the number of private boats already in the area, these shuttle boats should not interfere with the experience of other boaters or kayakers.

Concern 11: The general management plan treats cultural resources in wilderness as though they are exempt from general prohibitions on structures.

(see appendix F: letters 11 and 13; no internet comments addressed this concern)

All of the park’s actively maintained historic structures are outside of the wilderness area. The general management plan does not propose the active maintenance of the remaining historic structures in the wilderness area, though there is no Wilderness Act requirement that they be actively removed. The general management plan does permit minor vegetation management in a small number of former logging camps, quarries, and other historic sites, which will be done consistent with the preservation of wilderness character. It also should be noted that for cultural resources within the wilderness area the laws pertaining to historic preservation remain applicable but must be administered in a way that preserves the area’s wilderness character. *NPS Management Policies 2006* §6.3.8 states “Cultural resources that have been included within wilderness will be protected and maintained according to the pertinent laws and policies governing cultural resources using management methods that are consistent with the preservation of wilderness character and values.” NPS managers will implement any action that might affect cultural resources in the wilderness area judiciously, integrating and meeting the requirements to protect both cultural resources and wilderness character.

Concern 12: The general management plan did not give high enough priority to the preservation of all structures. The application of the historic management zones appears to exclude known historic sites.

(see appendix F: letters 10, 30, 31, and 44; no internet comments addressed this concern)

In terms of money and effort, the preservation of historic structures is one of the top priorities of Apostle Islands National Lakeshore. Indeed, the National Park Service spends more money on historic preservation projects at Apostle Islands National Lakeshore than most, if not all, other activities. As noted on page 101 of the draft document, the National Park Service would continue to follow all applicable laws and agency policies regardless of the alternatives considered in the plan. Pages 32-34 of the draft document identified the specific laws and policies that pertain to the preservation of historic structures, and identified desired conditions and strategies concerning historic structures. Specifically, the text stated that “Preservation of historic structures will be emphasized as a critical component of the park’s ongoing maintenance and resource protection program.”

Despite the commitment that the National Park Service has made towards historic preservation at the park, it is not always practical or feasible for us to attempt to preserve all non-historic structures. We must carefully weigh and prioritize preservation decisions against other equally important and sometimes conflicting concerns such as visitor safety, protection of natural resources, and operational considerations. However, any action with the potential to adversely affect cultural resources (including the decision to allow a historic structure to molder) will only be undertaken in compliance with the requirements of the National Historic Preservation Act and NPS management policies.

With regard to the application of the management zones, we believe most of the park’s historic structures (those properties listed or eligible for listing in the National Register of Historic Places) are included in the historic zone in the NPS preferred alternative. However, the Hansen farm on Sand Island was inadvertently not included in a historic zone. We have corrected this in the final

document, adding a historic zone on the East Bay area of Sand Island. Other historic properties that may not specifically fall within the historic zone would nevertheless be managed in accordance with applicable policies and guidelines for the treatment of cultural resources.

Concern 13: The general management plan overemphasizes wilderness preservation and does not adequately emphasize visitor recreation and enjoyment, and benefits selected visitor groups such as kayakers and wilderness backpackers.

(see letters 21, 33, 38, 43, 44, and 50; no internet comments addressed this concern)

With some 80% of the land area of Apostle Islands National Lakeshore designated as the Gaylord Nelson Wilderness, the National Park Service is mandated by law to protect the wilderness character of the area. However, the National Park Service is also mandated to provide for visitor enjoyment of the park. As noted on page 37 of the draft document, we recognize the importance of park units for Americans to enjoy and experience. The text further states it is a desired condition that “high-quality opportunities continue to be provided for visitors to understand, appreciate, and enjoy the park.” We believe the preferred alternative would provide more opportunities for people to enjoy the park (see the concept of the alternative on page 119 of the draft document). All user groups are considered in this alternative — kayakers and backpackers are not singled out or given more attention than other user groups. (Indeed, most of the time, effort, and money resulting from the preferred alternative’s recommendations would be directed either towards other user groups, or towards facilities used by all user groups.) The plan would continue to ensure that the park’s facilities would continue to be maintained for all visitors.

Concern 14: The general management plan will compromise wilderness values by increasing accessibility of the islands and providing new developments.

(no letters addressed this concern; see internet comments 10, 16, 37, 38, 39, 50, 52, and 89)

As noted above, the National Park Service is mandated to protect the wilderness character of the Gaylord Nelson Wilderness area. The preferred alternative does not call for increased access or use of the wilderness area. (The preferred alternative does call for increased opportunities for visitors to access Sand and Basswood Islands, but these islands

are not within the wilderness area.) No new developments would be built in the wilderness area, although as noted on page 124 of the draft document, some campsites and trails maybe reconfigured and/or relocated to protect resource and wilderness character. In point of fact, an existing development, the Oak Island group campsite, would be relocated outside of the wilderness area. Furthermore, to ensure that the wilderness character is maintained, several user capacity indicators and standards would be applied, and the wilderness area would be monitored to ensure wilderness character impacts are minimized (see pages 112-115 of the draft document; pages 110-113 of this document).